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SPRUCE KNOB-SENECA ROCKS NATIONAL RECREATIONAL AREA

IMPACT ON THE LOCAL COMMUNITY

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SPRUCE KNOB-SENECA ROCKS NATIONAL RECREATION AREA: IMPACT ON THE LOCAL COMMUNITY

Economic Research Service U.S. Department of Agriculture

SPRUCE KNOB-SENECA ROCKS NATIONAL RECREATION AREA: IMPACT ON THE LOCAL COMMUNITY. By Howard A. Osborn. Economic Research Service, U.S. Department of Agriculture.

ABSTRACT

Projection of visitor spending to the year 2000 provides the input for an input-output derivation of income effects of a National Recreation Area (NRA) on three West Virginia counties. Visitor spending is computed from expenditure budgets and estimates of growth by visitor types resulting from expected resource development. Independent subjective estimates of the probability of construction and the expected effect of several reservoirs, highways, and ski resorts projected for the immediate and adjacent area form the basis for projecting visitation. Population growth is included in the projections but possible growth in per capita income is not. Importance of water reservoirs as a recreation base is shown. Local visitors are expected to make greatest use of the area, although overnight campers will spend most total time in the NRA. Use of commercial motel and restaurant facilities would contribute most to income.

Key Words: National Recreation Area, Economic impact, Rural development, Land use, Resource conservation and development, West Virginia, National Forest, Input-output.

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PREFACE

Establishment in 1965 of the Spruce Knob-Seneca Rocks National Recreation Area (NRA) in West Virginia raised many questions for local citizens.

1. Should an unemployed or underemployed worker leave the area for better work opportunities or should he wait for local development?

2. Should a small landholder sell to a private buyer, wait for the government to decide whether it wants his land, or hold for speculative reasons?

3. Should a businessman choose this time for capital expansion, or is some larger operation likely to make his enterprise obsolete?

4. Should the community undertake needed capital improvements on the basis of predevelopment assumptions, or should it wait for clarification and a new set of assumptions to surface?

The Potomac Headwaters Resource Conservation and Development (RC&D) Council (the local coordinating body that carries out the USDA Resource Conservation and Development Program) felt that more information was necessary to encourage participation of local leaders in solving the resource development problems arising from the NRA development plan. It requested this study to provide a broader concept for developing answers to such questions.

This study does not attempt to assess national impacts of the NRA. It focuses on certain economic impacts affecting the immediate locality, the three-county area of Grant, Hardy, and Pendleton Counties. It deals with both past and future. Much data used to project the future was based on subjective evaluation by knowledgeable people in the area (referred to as the panel in the study), including staff of the Region 8 Planning and Development Council, the Potomac Headwaters RC&D Council, the U.S. Forest Supervisor's Office, and the Potomac District Ranger's Office of the Monongahela National Forest.

USDA's Resource Conservation and Development Program encourages local initiative in dealing with natural resources and related community problems. The program is directed by the Soil Conservation Service (SCS) with participation by other USDA agencies. This study, financed by SCS and carried out by the Economic Research Service, deals with an NRA managed by the Forest Service. The 1969 NRA plan was both a development and a land management plan. Its success depends on cooperation between private landholders and the Forest Service and recognition of a public interest in land use regulation. This study helps point out land use options still open in the area.

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HIGHLIGHTS

Spending by visitors to the Spruce Knob-Seneca Rocks National Recreation Area (NRA) in West Virginia is expected to increase personal income in Grant, Pendleton, and Hardy Counties by at least half a million dollars per year by the year 2000 (in 1972 dollars). Visitor spending was projected to increase by $1,250,000. Beneficiaries would be restaurants, 34 percent; motels, 20 percent; gas stations, 19 percent; and miscellaneous recreation trade and services, 27 percent.

By the year 2000, visitor level to the NRA was projected to increase about 2.5 times the 1972 level. Projections were based on population growth and the expected effect and probability of construction of various highways, reservoirs, and ski resorts. The greatest increase in visits is expected from local people and by owners of second homes within a 100-mile radius of Seneca Rocks, center of the NRA. Visitor level at the NRA depends greatly on decisions external to NRA management, such as authorization of the Army Corps of Engineers' Royal Glen project and location of Appalachian Highway Corridor H.

Water developments, mainly the Royal Glen Reservoir, were credited with generating more than three-fifths of the probable growth in visitor numbers. Highway improvements, mainly Corridor H, may generate about one-fifth of the visitor growth. Population growth and resort development were responsible for the rest.

Only one-fifth of the visitors would use local commercial or public overnight accommodations. Nearly four-fifths were expected to return home, or remain ove night outside the three-county area. Lodgers at commercial facilities, however, were expected to generate more than half the increase in local personal income, day visitors about a fourth, and campers about a fifth.

More land use pressures in the NRA and vicinity may result from highway, commercial, and second home developments than from direct NRA acquisitions and development. Total impact will depend on the community's adjustment and response to the need for coordinating Federal, State, and private land use plans.

The projections do not take into account projected growth in real per capita income or inflation levels. These factors are expected to greatly increase nominal values by the year 2000 and to have at least some impact on real values.

The three-county economy has shifted from a largely agricultural base to a commercial and industrial base. The change has generated much of the increase in per capita income in recent years. Future economic gains are expected to result from greater participation of women and students, particularly in part time and seasonal recreation-oriented jobs. The study did not analyze the extent or economic impact of second home or retirement homes on the economy, but these are expected to be significant. Although the three counties have a surplus of workers commuting to employment outside the area, they also provide significant employment for workers from economically less fortunate areas. The strengthening economic base plus an attractive environment suggest a likely increase in population.

The need for jobs and accessibility to jobs by automobile has drawn people out of the farthest hollows and encouraged them to relocate alongside the better roads. The longrun economic decline is well past. Growth problems now facing the communities of the three counties are similar to those faced by much of the Nation over the last 20 to 30 years. The quality of housing has improved substantially in recent years and increasingly resembles suburban developments.

Maintaining the quality of settled openness while basic social changes are taking place is a challenge of stewardship. Stewardship includes not only private responsibility for private land and public responsibility for public land, but also social responsibility for maintaining cooperation between local, State, and Federal people.

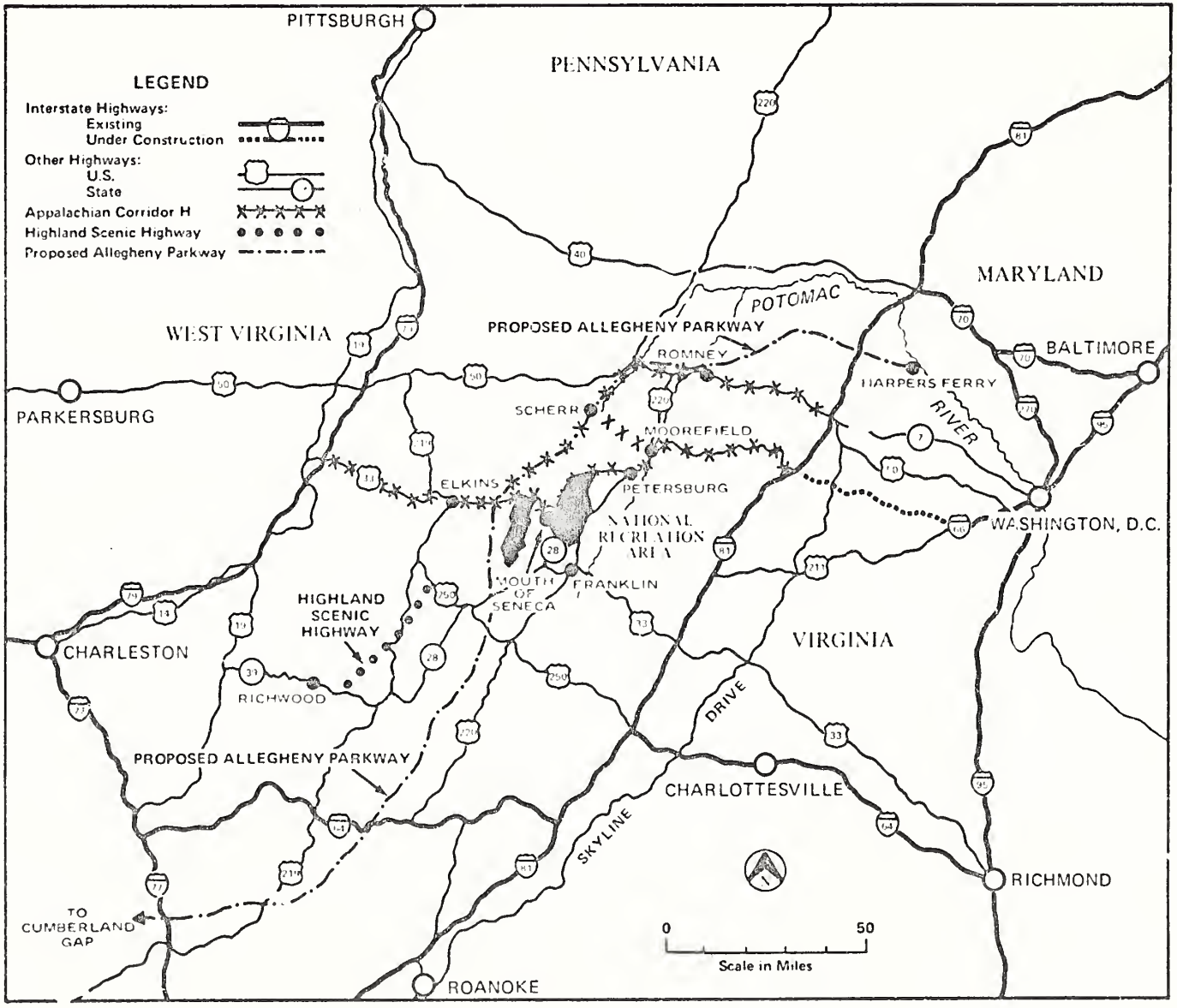

Figure 1. EXISTING AND PROPOSED HIGHWAYS FROM NEARBY POPULATION CENTERS TO THE NRA

Spruce Knob-Seneca Rocks National Recreation Area: Impact on the Local Community

by

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INTRODUCTION

In 1965, Congress voted to establish a National Recreation Area (NRA) comprising about 100,000 acres in West Virginia's Spruce Knob-Seneca Rocks area. One of the least densely populated areas of the Eastern United States, it lies about 135 air miles west of Washington, D.C., within the boundaries of the Monongahela National Forest (fig. 1).

The U.S. Forest Service published development, management, and land acquisition plans for the NRA in 1969. Although about 40 percent of the designated area was already in public ownership and a large part of the rest was scheduled to remain in private ownership, the Forest Service actions caused a great deal of uncertainty among local residents--to those whose lands might be taken and to those whose future business and employment opportunities might be affected.

In 1962, the Outdoor Recreation Resources Review Commission (ORRRC) presented its report to the President and Congress after 3 years of study (8). 1/ ORRRC projected a tripling of national demand for outdoor recreation based on a near doubling of the Nation's population by the year 2000. These expectations infuenced the NRA development plan. This strong rate of recreation influenced growth also was seen as a favorable factor in slowing the economic decline of rural areas such as Appalachia.

The study area 2/ was nearing the end of a long period of economic depression in 1965. Unemployment averaged 10 percent (16 percent in 1958), although actual employment was at the highest level in a number of years. At that

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1/ Underscored numbers in parentheses refer to items listed in Literature Citations, p. 44.

2/ The NRA is located in Grant and Pendleton Counties; for purposes of this study, adjacent Hardy County was also included in the analysis because of its close economic link.

time, the questions were: How would a National Recreation Area affect local business? Would the 2.5 million visitors the plan was designed to accommodate actually materialize? What other developments would likely follow? The welcome expectation of improved business and employment was offset by prospective loss of private land to Federal ownership and some people became apprehensive about the environmental impact of overdevelopment of a natural resource area.

By 1971, unemployment in the three study counties had dropped below 6 percent. Manufacturing jobs had doubled in the last 10 years, other nonfarm employment was also up, and total employment slightly exceeded the previous peak in 1950. The prospect of the NRA was becoming less of an opportunity to business interests and the local community. By 1975, 10 years after the announcement of the NRA, few of the recreation developments scheduled in the NRA Development Plan had been accomplished. Projections of population in the year 2000 dropped from 350 million in the ORRRC report to only 264 million, greatly lessening projections of recreation demand (17).

Public land acquisition for the NRA proceeded much more slowly than predicted due to local opposition, limitation of the use of eminent domain, higher land prices, and Federal budgetary restraints. From 1965 to 1975, private land transfers to outsiders (developers, speculators, and second-home purchasers) in the three-county area probably exceeded Federal purchases. Second home developments may have more impact on the community than the NRA and more direct economic impact than transient visitors to the area.

The NRA plan was an unfunded, multiyear development proposal. Its visitor projections depended heavily on the construction of the Royal Glen Reservoir--an unfunded, not-yet-authorized project of the Army Corps of Engineers. Shifts in budgetary priorities and management aims of the Federal Government have delayed and in some cases changed the eventual development of the NRA.

The study examines some of the uncertain elements still existing that will have future impact on the NRA. In order to provide a context for analysis, the study briefly reviews the natural resource and management objectives of the NRA and other elements of development that will bring visitors to the NRA.

A major focus of this study is to project the level of visitation by major types of visitors. Visitor spending will produce much of the expected economic impact. If reliable visitation forecasting were possible, economic forecasting would be practical. Forecasting has considerable limitations even under stable conditions. The impact of a single new reservoir or campground on an established recreation area might be relatively easy to project. But, the NRA complex, with its proposed 10-year development program, was introduced into a dynamic recreation situation that already included new highways, ski resorts, and reservoir development. Changing public attitudes toward management of public and private lands added a further complicating factor.

Data developed in this study serve as a basis for calculating visitor spending and its contribution to personal income in the three-county area. Levels and recent trends in population, employment, and personal income are analyzed in order to put projections into context. The final chapter touches on some of the implications of this development. This information may be useful at the

local level in reaching land management decisions compatible with local and national goals. It should strengthen the dialogue between State and national decisionmakers and local leadership.

WHAT WILL BRING VISITORS TO THE NRA?

The NRA was established in an area known for fishing, hunting, hiking, climbing, and white-water canoeing. Proposed developments would widen the area's appeal to boaters and swimmers, make it more accessible by construction of scenic drives, and provide additional accommodations for campers and picnickers. External developments may also make it more attractive and more accessible to visitors.

The NRA is located about equidistant from Washington, D.C., Pittsburgh, and Charleston (fig. 1). Seneca Rocks, a major scenic attraction near Mouth of Seneca, is located approximately at the center of the NRA (fig. 2). Counties whose centers lie within 150 miles of Seneca Rocks had a total population of 11.7 million people in 1970; 66 percent lived in urban areas (table 1). These are the potential visitors to the NRA.

Table 1--Resident population within selected distances from center of NRA, 1970

Radial distance from NRA center	Population			People per square mile
	Total	Rural	Urban	
	Thousands	Percent		Number
50 miles	279	74	26	38
100 miles	1,672	70	30	55
150 miles	11,743	34	66	148
200 miles	19,939	NA	NA	159
300 miles	47,301	NA	NA	167

NA = not available.

Source: Compiled from (13).

The remoteness and rural character of the NRA--the reason why some people will travel many miles to reach it--is also a reason why relatively few people will visit often. Fewer than 25,000 people live in the three-county area. Population of the county seats are Franklin, 695; Petersburg, 2,127; and Moorefield, 2,124. Fewer than 300,000 people live within a 50-mile radius. Those people who might be frequent visitors may have many similar attractions nearer to them.

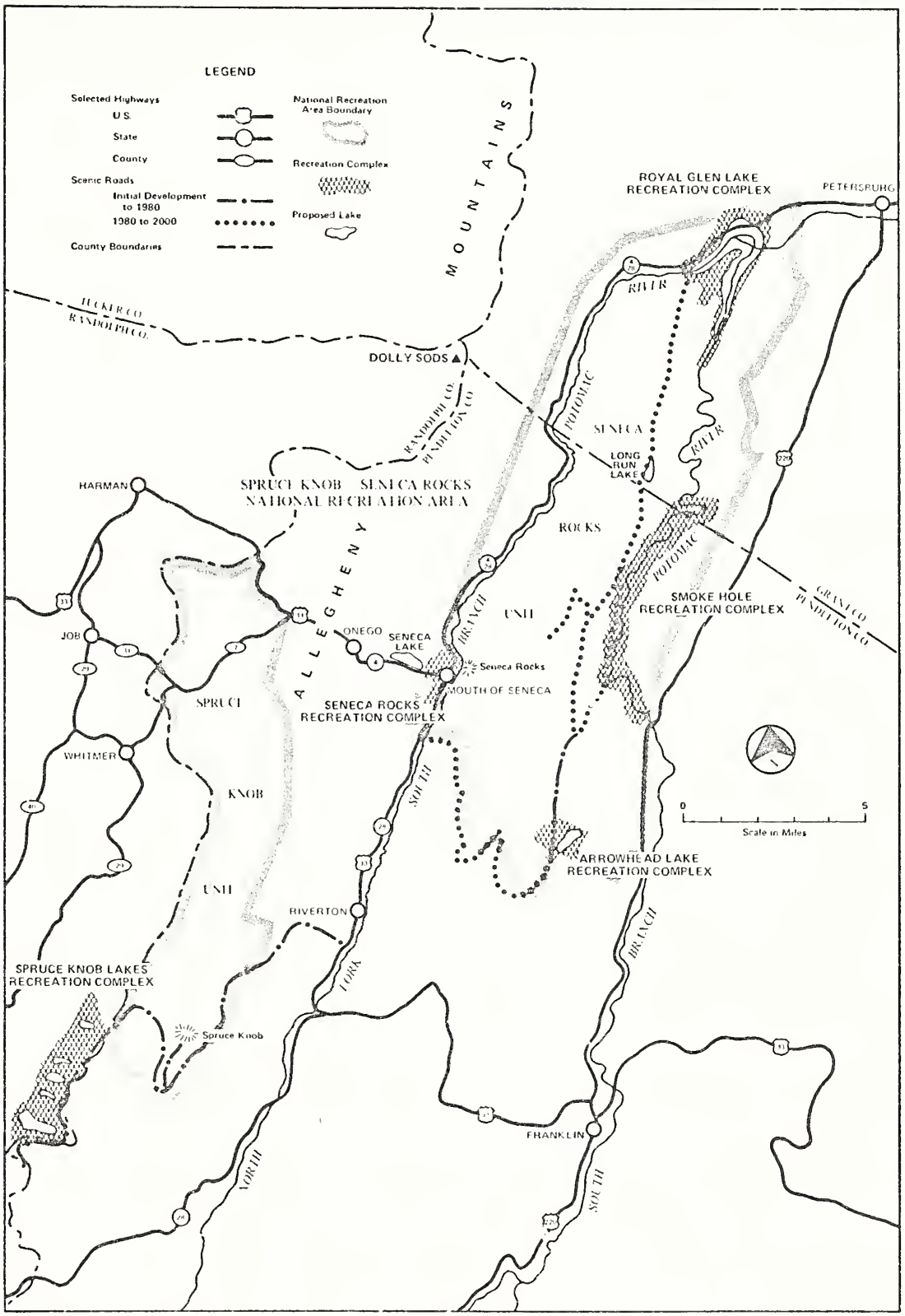

Figure 2. PROPOSED AND EXISTING RECREATION DEVELOPMENTS IN THE SPRUCE KNOB–SENECA ROCKS NRA

Even within 100 miles of Seneca Rocks, there were only 1.7 million people in 1970. About 250,000 lived in rural places 3/ and about 1 million were dispersed rural residents. On the average, rural residents indulge in less outdoor recreation than urban residents.

Half a million urban residents lived within day-trip range (100 miles) of the NRA, and all of these lived in places of 50,000 or less population. Since they have easy access to other recreation areas, their frequency of NRA use will depend upon the quality of NRA facilities in relation to those in other areas.

The 7.7 million urban residents within the 100- to 150-mile range may be those most likely to seek out the NRA and use it competitively with other outdoor recreation areas. Additional visitors from urbanized areas 150 to 200 miles distant may be expected.

NRA Management Plan

The Monongahela National Forest, within which the NRA lies, comprises about 840,000 federally owned acres inside purchase boundary limits of 1.6 million acres in the northeastern part of West Virginia's Appalachian Highlands. The NRA was selected within the forest in two noncontiguous units in order to include Spruce Knob, the highest point in West Virginia; Seneca Rocks, a distinctive landmark; and Smoke Hole, a scenic, undeveloped gorge carved by the South Branch of the Potomac.

The total NRA development as outlined in the 1969 Management Plan (9, p. 133) provides facilities for the following number of persons at one time:

Activity	One-time capacity	
	Persons	Percent
Swimming	2,200	7
Fishing and boating	3,700	12
Interpretive facilities	1,250	4
Sightseeing, driving for pleasure	9,473	30
Camping and picnicking	8,612	28
Other	6,065	19
Total	31,300	100

Only half the designed capacity relates directly to developed recreational facilities. The other half consists of sightseeing, driving, or dispersed activities in undeveloped areas.

3/ According to census definitions, places of 2,500 or less population are classed as rural.

Primitive areas and lack of development are strong points of the national forest and particularly of the NRA. This type of area, relatively rare in the East, cannot accommodate large-capacity development without reducing its basis of attractiveness. There is less demand for primitive recreation than for development sites but primitive land needed per visitor is relatively high. Since the NRA was established, the adjacent Dolly Sods area and nearby Otter Creek have been set aside as wilderness areas in the Monongahela National Forest.

Plans for four distinct management zones are based on resource potential:

1. Pioneer zone--The rugged natural beauty of three relatively remote areas, totaling 21,300 acres, will be managed so evidence of civilization is minimized.

2. Water-related zone--Most of the concentrated recreation use is expected on about 19,000 acres along selected streams and rivers and around lakes and reservoirs including the Corps of Engineers' proposed Royal Glen Reservoir. Aesthetic values and water quality will receive primary management consideration. Areas of heavy public use must receive adequate soil and water protection.

3. Travel zone--Lands along scenic roads and trails (about 13,500 acres) will receive special management to enhance the aesthetic appeal of the forest environment.

4. A multiple-use forest management zone--About half the NRA (46,000 acres), will be a buffer zone between the pioneer zone and the more heavily used zones. Modified timber harvest will be permitted. Dispersed recreation, livestock range, game habitat, and water yield are other uses of this management zone.

While these management objectives cover all of the NRA, Federal authority is limited to the land actually in Federal ownership. At present, there are no county or State zoning or land use plans within the NRA. 4/ For this reason, success of the management proposals depends on voluntary cooperation of private landholders.

Water Developments

The Appalachian area lacks reservoirs and lakes for flat-water recreation, swimming, and boating. Such areas are tremendous attractions to potential visitors. After purchase of the essential lands, development of the NRA will take place largely in the water-related and scenic travel zones. The flat-water facilities were planned to accommodate 2,200 swimmers and 3,700 boaters by 1980. Together with related camping, picnic, and other visitor facilities, water developments were expected to account for a third of the projected visitor level by 1980. It is now too late to meet the 1980 goal.

4/ The Grant County Planning Commission has proposed zoning regulation and standards (5).

Since the planning of the NRA development, physical and economic realities have limited the feasibility of some original plans. Water storage along the steep watercourses and above limestone geologic formations is quite chancy since it depends on the coincidence of practical surface and subsurface formations. Prevention of leakage into limestone caves can be expensive or impossible. Thus, small water storage projects depend on favorable physical and economic feasibility studies.

Some reservoirs are proposed in conjunction with floodwater storage. The Arrowhead and Long Run lakes would be constructed with Soil Conservation Service assistance; the Royal Glen Reservoir would be a Corps of Engineers project. The Forest Service would be responsible for planning and operating recreation facilities. Much of the expected increase in visitation will depend on the Royal Glen project on the South Branch of the Potomac River above Petersburg (10). The NRA Management Plan accepted a proposed modification of the original Royal Glen plan in order to avoid flooding white-water areas of the Smoke Hole pioneer zone and to enhance recreation aspects of the proposed reservoir. However, this project has not been authorized and is not presently under active consideration by Congress.

The NRA has acquired a site for Arrowhead Lake in the Seneca Rocks management area. Seneca Lake, proposed for an area outside the project boundary but overlooking Seneca Rocks, has been delayed by site problems. Proposals for the Spruce Knob Lakes are being reconsidered to comply with the National Environmental Protection Act (NEPA). The number of lakes will probably be reduced from five to two or three. The proposed Long Run Lake in Grant County will require a feasibility study to determine likelihood for development.

Visitors to more distant projects west of the NRA, such as the proposed Corps of Engineers' Rowlesburg Reservoir and the proposed Monongahela Power Company's Davis Power Project, may also be attracted to the NRA. The sites for water storage and funds for construction are limited, so that recreation lakes are not likely to be plentiful.

Visitation levels for the entire NRA are quite interdependent. Over three-fifths of the planned picnic and camping facilities are related to flat-water development. Without flat-water development, the demand for camping and picnic facilities will be considerably reduced, and driving for pleasure may be less attractive.

The NRA plan allocated an estimated 21 percent of total visitation to dispersed activities. A reduction in water development will mean fewer visitors to the area and less impulse participation in other forms of recreation. This may be partly offset by increased attractiveness of the area to those who prefer remote areas.

Highway Developments

Highway access to the recreation area has three dimensions: (1) Will routes for distant visitors be as direct as those to alternative recreation areas? This is particularly important for urban visitors from metropolitan areas. (2) Does the

NRA have convenient through routes in order to attract vacation travelers heading for other destinations? (3) Can local roads handle the local or distant visitor level?

The NRA plan provides for a 23-mile scenic drive connecting Spruce Knob to the State-Federal highway system at two points, and a 54-mile scenic drive from Seneca Rocks to the Smoke Hole recreation area. Almost 23 percent of estimated visitor days in 1980 depend on completion of these projects. However, it is unlikely the projects can be finished by then. In addition, visitation depends on improvements in the State-Federal highways.

Appalachian Corridor H

The Appalachian Highway Program was funded to improve access and stimulate economic development in that region. Corridor H is proposed as a 150-mile, four-lane facility with partial access control to link routes I-79 on the west and I-81 on the east of the NRA. 5/ It would be the only four-lane, east-west route in the 130 miles between Route 64 on the south and Appalachian Corridor E through western Maryland. It would draw traffic from routes 33, 50, and 55 and also generate its own traffic. Corridor H was originally intended to link Petersburg and Elkins--passing through Mouth of Seneca and the heart of the NRA. The routing was opposed by the Forest Service and others because of its environmental impact on the NRA. Two proposed alternate routes would bypass the NRA by heading north at Wymer to Scherr, west of the NRA. One of these alternate routes would pass through Romney and continue on U.S. Route 50. The other would turn south at Scherr, pass near Moorefield and continue to Route I-81, more or less along the current Route 55, and connect with Route I-66. These three proposed routes would have considerably different impact on visitation to the NRA.

The routing from Route I-66 to Moorefield would greatly facilitate the flow of visitors from the Washington, D.C. area, as well as local visitors along that part of the route. The routing through Romney, on the other hand, would completely bypass the NRA, and probably require upgrading of access roads but still result in difficult access to the NRA.

The routing through Mouth of Seneca would provide ready access to the heart of the NRA and result in considerable casual visitation by through travelers, while also improving access for planned visits. The effect on visitor numbers will depend on the final routing and the rate of completion. Construction has begun on a segment near Elkins, but routing of the eastern half of the corridor is still undetermined.

5/ Partial access control permits a limited number of at-grade intersections with intersecting roadways, up to two per side per mile, but prohibits driveways and other minor and commercial roads. In partially developed areas where it is feasible to salvage portions of the existing facility, it would sometimes be necessary to provide frontage roads to serve existing development that would be denied direct access to the new proposal. The frontage roads would be outletted by connecting them to the nearest existing facility intersection with the proposal, or sometimes to an existing road not affected by the proposal (22).

Route I-66 and Route 7

Route I-66 will link Washington, D.C. with Route I-81 running north-south through the Shenandoah Valley. It may also link up with Corridor H, providing a four-lane route almost to the boundaries of the NRA. Controversy regarding I-66 has been centered on the link-up from the Washington Capital Beltway (I-495) to the inner city but has also extended to outer stretches of the highway. Completion of I-66 from I-495 to I-81 may require about 3 years after resolution of environmental disputes. A four-lane Route 7, which should be completed by 1980, will link with the Romney alternative of Corridor H. These routes, which will shorten travel time from Washington to the NRA, will encourage metropolitan residents to go farther afield in search of second homes, camping spots, and other overnight accommodations and bring them within range of the NRA. It may also divert other travelers to within range of the NRA for possible short visits during longer journeys elsewhere.

Highland Scenic Highway

The Highland Scenic Highway was projected as a multipurpose road to follow the high ridges for about 160 miles throughout the length of the Monongahela National Forest from Richwood on Route 39 north to Route 50 near Romney. The highway is now scheduled to terminate short of the NRA, giving travelers the choice of taking Route 250 and avoiding the NRA, or of taking Route 28, which passes through the middle of the NRA but permits an earlier exit to the east on Route 33. Its future location north of U.S. Route 219 and Elk Mountain, however, is uncertain.

Work on the Highland Scenic Highway, now being constructed on Forest Service land, is progressing in segments. The road is being built by the West Virginia Department of Highways in concurrence with the U.S. Department of Transportation's Federal Highway Administration, but the Forest Service has design input in the project. The highway, operated as a two-lane, recreation-oriented parkway, will have a greater carrying capacity than alternate State and Federal highways. This should appeal to tourists wishing to visit recreation facilities in the National Forest and is expected to increase the number of visitors.

Allegheny Parkway

The Allegheny Parkway was proposed a number of years ago but has never been funded. Plans call for 630 miles of two-lane parkway from Cumberland Gap, Ky., to Harpers Ferry, W. Va. The parkway would link a number of recreation facilities in highland Appalachia and attract visitors to the general vicinity of the NRA. It would be similar in many ways to the Blue Ridge Parkway in Virginia and North Carolina, including operation by the National Park Service.

Facilities

In general, U.S. recreation activities are provided through organized economic enterprise, either public or commercial. Success of development calls for a balance of public and private inputs. At the minimum, the public sector is

usually responsible for road access. At times, it may even provide lodging, restaurants, and recreational activities, although these are usually arranged by contract with private enterprise. Recreation may be part of a joint product along with a nonrecreational use--highways, restaurants, and motels cater to both commercial and recreation visitors. Owners of individual recreation-oriented facilities may profit from the complementarity of their services but are less able to optimize the total income. It may be uneconomic to run a restaurant late into the season, although a motel or gas station might operate profitably. On the other hand, seasonal closing of a restaurant may reduce the number of visitors who otherwise might stop in the area for gas.

The complementarity of public and private recreation facilities may be fairly extensive. Tourists may stay in a central place and visit nearby facilities or they may have a predetermined route, stopping a day or two at desirable locations along the way for day visits. Central places with lodging, restaurants, and other commercial facilities may receive most of the tourist dollars, although peripheral commercial facilities also may contribute employment and income if they are well located and well managed. Increasing numbers of people are purchasing second homes in recreation areas in order to take advantage of facilities without having to depend on commercial accommodations.

Resorts

In some instances, fully integrated resorts cater to all visitor needs--foods, lodging, and activities. Such enterprises attempt to balance costs and returns to give the best possible service and attain the greatest net income.

A number of West Virginia resorts provide hotel accommodations (sometimes cabins) and integrated recreation activities such as golf, tennis, boating, and hiking. They often encourage guests to visit surrounding scenic attractions as part of their overall promotion. The NRA is an easy drive from Blackwater Falls and Canaan Valley State parks which provide resort facilities. Canaan Valley also has ski facilities that extend the recreation season. Recently, private money has been used to develop resort condominiums operated as hotels. In some of these resorts, the owner can rent his facilities when not using them, thereby extending seasonal use.

Developments at Canaan Valley State Park (a new ski lodge), Snowshoe (an integrated ski and summer resort), and Job Mountain and Bryce Mountain in West Virginia (projected ski resorts and second home developments) were evaluated in this study for their probable effects on visitor levels in the NRA. Other comparable facilities may also develop.

Ski resorts in the general area may influence activity in the NRA for several reasons: (1) In order to extend the season of lodging and restaurant facilities ski resorts include golfing, swimming, and other summer activities competing with and complementing NRA recreation facilities. (2) If resort lodgings and facilitites are inadequate for peak ski demands, skiers may use nonresort facilities. Such use during their normal off-season may encourage better accommodations and increase visitation and spending in both summer and winter. New commercial lodging will most likely develop on through routes reasonably close to both summer and winter recreation areas.

Vacation Homes

There has been a rapid rise of rural subdivisions in the area. A number of them are practically adjacent to the NRA. Several are even within its borders. The more distant ones would still put second home owners within a day's trip of the NRA. In 1970, about 75,000 homes were kept for occasional use in non-metropolitan areas within 150 miles of Seneca Rocks (13). Only 8,000 vacant homes were reported for sale in the same area at the time of the 1970 census. From 1968 through June 1973, there were potentially 46,228 lots in 47 registered projects 6/ in 16 counties within 100 air miles of Seneca Rocks (15). Most of these were also within 100 road miles of the NRA. Twelve of the registered projects were in West Virginia (none were in the study area), 33 in Virginia, and one each in Maryland and Pennsylvania.

Additional subdivisions, not meeting legal requirements to register, are selling lots; there are innumerable sales by individual lot owners. Market analysis data collected by the Monongahela National Forest indicated that 96 small lots were sold in 11 active unregistered subdivisions in Grant and Pendleton Counties in 1969-71. Individual owners sold 308 lots of 10 acres or less in 1970-71 and subdivisions sold 21 lots of 10 to 50 acres (table 2). More than 1,600 acres were sold for about $800,000, mainly in 1970-71. Both prices and rates of sales have probably increased.

Table 2--Lot sales, Grant and Pendleton Counties, 1969-71 1/

Size and type of sales	Number of sales	Average lot size	Average price per lot	Average price per acre
	Number	Acres	----------Dollars----------	
Under 2 acres				
Subdivision	29	.92	1,495	1,631
Individual 1/	2/ 180	.63	761	1,204
Total	209	.67	863	1,285
2 to 10 acres				
Subdivision	67	6.72	3,740	556
Individual 1/	3/ 128	3.56	1,389	391
Total	195	4.65	2,197	473
10.1 to 50 acres				
Subdivision	21	26.85	7,962	297
Total	425	3.86	1,825	473

1/ Individual sales 1970 and 1971 only.
2/ Includes 46 lots with improvements.
3/ Includes 33 lots with improvements.

Source: (18).

6/ Subdivisions offering land for sale in interstate trade are required to register with the U.S. Dept. of Housing and Urban Development Office of Interstate Land Sales Registration.

This study has not attempted to project the number of lots that will be sold or built on for second homes, but recognizes that second homes will increase the number of potential day visitors to the area.

WILL VISITORS HELP LOCAL INCOME?

Certain economic impacts flow from expenditures involved in facility construction, but in the longer term, economic impacts will derive from spending by visitors. (The economic impact derives from where the spending takes place, rather than where the activity takes place. Much recreation spending occurs in the visitor's home market area and has no impact on the economy of the area he visits. The amount of spending depends heavily on the type of visitor and particularly on where he spends the night.)

The average overnight motel visitor would spend about $18.50 per day in the area based on 1972 figures, while the average visitor who lives in the locality would spend only about $1.00 per day in connection with his recreation visit. Campers and other visitors would spend $2.00 to $3.00 (app. table 1). Thus, the economic effect on the study area depends to a large extent on what type of visitor comes and what kinds of facilities he uses.

This section examines the impact of spending by different types of visitors. It also investigates the effect of various developments on the number and type of visitors, and attempts to project the rate of increase to the year 2000.

Methodology

Projections are based on a number of judgments by the panel. These judgments are combined mathematically to reduce the great number of uncertainties. This procedure provides an arithmetical statement of several subjective estimates of visitation and visitor spending by the year 2000.

Visitor Type

Visitors to the area are classified by different types, depending on where they spend the night. Each type has different spending habits and each is affected differently by access and facility developments.

1. Day visitors/local--live within a day's travel of the NRA (about 100 miles). Some live within the study area (20,000 visitors, 1972).

2. Day visitors/second home--have second homes within a day's travel of the NRA. Spending refers only to recreation spending during the visit to the NRA, not to other spending that may result in the study area in connection with home ownership (20,000 visitors, 1972).

3. Day visitors/transient--are generally on a specific trip involving lodgings outside the study area. Spending within the study area is recreation-associated (48,000 visitors, 1972).

4. Lodgers/motel--are recreation-oriented motel visitors (8,500 visitors, 1972).

5. Lodgers/resort--day rate covers meals and lodging and possibly other recreation. Resort category covers a wide range from tourist farms to ski resorts (700 visitors, 1972).

6. Campers/public facilities--stay in organized campgrounds on Forest Service lands, in tents or trailers, or in the open (8,500 visitors, 1972).

7. Campers/private facilities--stay in organized campgrounds on private lands in tents or trailers, or in the open (5,500 visitors, 1972).

8. Campers/cabins--generally stay in own trailer (or in cabins where tenant furnishes bedding) in a permanent or seasonal trailer park catering to recreational tenants (5,000 visitors, 1972).

Visitation Projections

Three types of proposed developments would doubtless draw additional visitors to the NRA--highway developments, water developments, and ski resorts. Panel members evaluated the probability that each project facility would be in operation by 1980, 1990, and 2000. They also evaluated the probable importance of each type of development in attracting new visitors (app. tables 2 and 3).

In order to convert these percentage projections to numbers of visitors, it was necessary to develop base year estimates of visitation. The Forest Service estimated the total visitation in the NRA at about 100,000 visitor days in 1972. 7/ The visitor day is defined as any combination of 12 hours of actual recreation time on National Forest land. In 1972, 42 percent of all visitor days were spent by campers at NRA facilities and 58 percent by noncampers. Based on data on motel capacity, population, and visitation, a probable distribution of visitors in 1972 was derived (table 3). This level was then projected to 1980, 1990, and 2000 on the basis of the above calculations. The resulting visitor number projections were expanded by 27 percent to cover the expected population increase to the year 2000 in the general market area of the NRA (17). The projected visitor numbers were converted to visitor day projections in order to provide a comparison with standard visitation estimates. 8/

7/ Includes visitation at Spruce Knob Lake, Randolph County.

8/ The equation is: visitor days = number of visitors x average number of days per visit x average number of hours per day ÷ 12 (see app. table 1).

Table 3--NRA visitations and visitor days, 1972, and projections for year 2000

Type of visitor	1972	2000	Increase	1972	2000	Increase
	------1,000 visitors------			--1,000 visitor days 1/--		
Day visitors:						
Local	20	117	97	11	64	53
Second home	20	78	58	8	31	23
Transient	48	99	51	14.5	30	15.5
	88	294	206	33.5	125	91.5
Lodgers:						
Motel	8.5	20	11.5	9.4	22	12.6
Resort	.7	1	.3	.6	1	.4
	9.2	21	11.8	10.0	23	13.0
Campers:						
Public facilities	8.5	30	21.5	42.3	147	104.7
Private facilities	5	17	12	7.9	27	19.1
Cabins	5	17	12	6.3	22	15.7
	18.5	64	45.5	56.5	196	139.5
Total	116	379	263	100	344	244

1/ One visitor day is equivalent to a 12-hour stay in the NRA.

Source: NRA study projections.

Spending Projections

Because resources were not adequate for a study on spending patterns, budgets were developed for probable spending within the NRA by different types of visitors. Estimates on length of stay and size of party were developed from various surveys in similar areas. These data are only approximate. But, when statistically combined, they permit reasonable comparisons between the various visitor types and between the present and the future.

Average daily expenditures were broken down into eight items: breakfast, lunch, dinner, retail, motel, resort, recreation, and gas. Multiplying these daily expenditures by average length of visit and projected visitor numbers gave projections of total spending by visitor type (app. table 4).

Income Projections

Visitors' effective spending was used in an input-output model to estimate study area incomes in the year 2000. Part of total spending is used to pay for goods and services imported from outside the area and has no effective impact on area income. The rest goes toward local costs of providing goods and services, such as wages, rent, and proprietor's income. These expenditures enter the income stream of the local economy and may circulate several times in further payments within the area before eventually passing to outside economies for the import of goods and services used by local business and residents.

Study Findings

Assumptions and data outlined above and in detail in the appendix were used to project visitor levels, spending levels, and income of the local area resulting from visitor spending. Projections were made for three periods and several development alternatives (table 5). By the year 2000, a projected 379,000 visitors would spend $2.0 million in the study area. The study projections assumed that not all development would be completed by 2000. Estimates were also made for varying levels of visitation depending on the routing of Corridor H. If all the projected developments were to take place, with the Petersburg routing of Corridor H, visitors would total 476,000, about 26 percent above the level actually projected.

NRA's Rate of Growth

The study indicates that by 1980, probably only 15 percent of potential economic growth due to recreation would be realized. About half of the potential growth would be reached by 1990 and about three-fourths by the year 2000. Full potential may never be achieved unless all projects are ultimately built. Without Royal Glen Reservoir, the NRA is projected to reach only about half its potential; without Corridor H, only about 60 percent of its potential.

Visitation

The study projected future visitation resulting from two factors: increase in population projected for the market area, roughly within a 150-mile radius of Mouth of Seneca, and probable effects of highway, resort, and water developments.

These factors indicate that the number of visitors would more than triple by the year 2000 (table 3). Measured in visitor days, visitation would increase from 100,000 in 1972 to 344,000. Three-fifths of this growth would depend on development of flat-water recreation, and more than two-fifths of it on the Royal Glen Reservoir alone (table 4). Projected highway development would attract about one-fifth of the total increase; most of this would depend on Corridor H. Resort developments in surrounding counties would increase visitation by only 4 percent. Population growth alone in the market area would account for 12 percent of the projected increase in visitors.

Table 4--Increase in NRA visitations attributed to population growth and facility development: Projections for year 2000

Causative factor	Increase in visitors		Increase in visitor days	
	Thousands	Percent of growth	Thousands	Percent of growth
Water development				
Royal Glen	110	42	90	37
Other	53	20	69	28
Highway development				
Corridor H	42	16	33	14
Other	15	6	14	6
Resort development	12	4	11	4
Population growth	31	12	27	11
Total growth to year 2000	263	100	244	100
Base, 1972	116	44	100	41
Total in year 2000	379		344	

Source: NRA study projections.

Most of the increase in visitors (78 percent) was projected to come from day visitors and only 22 percent from overnight visitors. Lodgers would account for only 4 percent of the increase in visitors and 5 percent of the increase in visitor days, while campers would account for 18 percent of the increase in visitors and 57 percent of the increase in visitor days. Because of longer visits, overnight visitors would account for 62 percent of the increase in visitor days.

The study also indicated that average length of visit would increase about 7 percent. Without Royal Glen, increase in visitation would be sharply less--153,000 instead of 263,000. Effect on day visitors would be greater than on overnight visitors. While Corridor H is credited with 33,000 extra visitor days, this would increase by about 10,000 if the route through Petersburg were chosen and would be about 15,000 less if the route through Romney were chosen.

Spending

If the NRA reached it full potential in terms of population and development factors analyzed, visitor spending in the year 2000 would reach $2.4 million and effective spending, $1.4 million. Based on visitor levels derived from probable levels of development, spending by 2000 would total only $2.0 million at 1972 price levels. If the Royal Glen Reservoir is not built by that time,

the spending level would be only $1.6 million. With Royal Glen, but without Corridor H, spending would total $1.7 million.

Table 5--NRA visitation and spending under various projection assumptions

Extent of projection	Visitations		Spending	
	Visitors	Visitor days	Total	Effective 1/
	--------Thousands--------		------1,000 dollars-----	
Base year 1972	116	100	753	462
1980	163	145	1,003	610
1990	288	256	1,592	947
2000 most probable	379	344	2,013	1,184
Without Royal Glen	(269)	(254)	(1,627)	(978)
Without Corridor H	(337)	(311)	(1,745)	(1,019)
Full potential	476	420	2,420	1,412
	Percent increase over base			
1980	41	45	32	32
1990	148	156	111	105
2000 most probable	227	244	167	156
Without Royal Glen	(132)	(154)	(116)	(112)
Without Corridor H	(191)	(211)	(132)	(121)
Full potential	310	320	221	206
	Percent of potential increase			
1980	13	14	15	16
1990	48	49	50	51
2000 most probable	73	76	76	76
Without Royal Glen	(43)	(48)	(52)	(54)
Without Corridor H	(61)	(66)	(60)	(59)
Full potential	100	100	100	100

1/ Effective spending is that which accrues to the local economy. The remainder goes immediately for payment of outside goods and service.

Source: NRA study projections.

Expected spending would be $1.26 million above the 1972 level of $753,000. Overnight lodgers are projected to account for 39 percent of the increase, day visitors for 33 percent, and campers for 28 percent (table 6). Water development would account for 47 percent of the increase; highway development, 27 percent; population, 17 percent; and resort development, 8 percent (table 7).

Table 6--Impact of increased visitor spending on personal income in study area, by type of visitor: Projections for year 2000

Type of visitor	Increase spending		Increased income	
	Total	Effective 1/	Direct 2/	Total
	1,000 dollars			
Day visitors:				
Local	95	45	20	31
Second home	177	79	36	55
Transient	142	65	29	46
	414	189	85	132
Lodgers:				
Motel	469	358	162	264
Resort	17	13	6	10
	486	371	168	274
Campers:				
Public	123	51	21	34
Private	83	41	17	27
Cabins	152	71	30	47
	358	163	68	108
Total increase 3/	1,260	722	321	514
Base year	753	462	205	328
Total 3/	2,013	1,184	526	842

1/ See footnote 1/ in table 5.
2/ Direct income is that part of effective spending that goes directly as wages or proprietors income. Part of the direct income and the remainder of effective spending circulates within the local economy producing additional local income.
3/ Columns may not add to total due to rounding.

Source: NRA study projections.

Table 7--Impact of increased visitor spending on personal income in study area, by type of development: Projections for year 2000

Type of development	Increased spending		Increased income	
	Total	Effective 1/	Direct 2/	Total
	1,000 dollars			
Water development:				
Royal Glen	370	206	97	144
Other	226	114	49	80
Highway development:				
Corridor H	272	165	71	119
Other	70	39	16	27
Resort development	104	70	30	51
Population growth	218	125	56	89
Total increase 3/	1,260	722	321	514
Base year	753	462	205	328
Total in year 2000	2,013	1,184	526	842

1/ See footnote 1/ in table 5.
2/ See footnote 2/ in table 6.
3/ Columns may not add to total due to rounding.

Source: NRA study projections.

Local day visitors would account for 37 percent of the increase in visitors, but for only 8 percent of increased spending. Campers would account for 57 percent of the increase in visitor days, but for only 28 percent of increased spending. While the small group of motel and resort visitors would account for only 4 percent of the increase in visitors, they would do 39 percent of the increased spending.

What would be the distribution pattern of spending in the recreation sector? Estimates in 1972 showed that restaurants in the three-county area took about one-third of the tourist dollar; motels, a fourth; and gas stations, a sixth. Other spending accounted for the remaining fourth. The projections point to a slight shift by the year 2000, with the share of gas stations increasing somewhat and motels dropping slightly. This spending would reach $2,013,000 by the year 2000. Restaurants would receive $429,000 of the increase; motels, $250,000; gas stations, $244,000; and other recreation, trade, and services, $336,000.

Personal Income

As a result of the increased visitor spending, local income in the study area is projected to increase about $0.5 million to a total of $842,000 by the year 2000 (at 1972 prices). Tables 6 and 7 indicate sources and distribution of this income by visitor type and facility development. With total spending of about $2.0 million in 2000, about 60 percent ($1.2 million) is effective in the local economy (called effective spending in tables 6 and 7), and 40 percent goes immediately for payment of goods and services outside the study area. About a fourth ($526,000) goes directly as wages or proprietors' income to those involved in servicing visitors' needs (called direct income in tables 6 and 7). About a third of total spending is recirculated within the local economy to pay for local goods and services, and generates additional personal income which represents the difference between direct and total income in tables 6 and 7.

Comparison of the total income and total spending columns in table 6 indicates that spending by motel and resort lodgers is nearly twice as effective in producing income in the study area as is spending by campers or day visitors. Nearly 60 cents of every tourist dollar spent by lodgers ends up as personal income for local residents, compared with only 30 cents of the camper's dollar and 32 cents of the day visitor's dollar. More than half the new income generated by visitor spending in the three-county study area is attributed to the motel/resort trade. The average motel visitor will add about $22.80 to local income. If he spends the night outside the area, this figure drops to 85 cents.

These income calculations are derived from data provided in an input-output analysis of the Upper South Branch Valley of West Virginia (2).

Other Factors

Study estimates are based on increases in visitation resulting from population growth and positive effects of access to and development in the NRA. Further unpredictable positive effects will result from other factors, such as the general increase in per capita income projected for the market area.

1. Personal income is projected to triple and per capita income to more than double by the year 2000 based on productivity, employment, and age factors (17).

Americans tend to spend about the same share of their income on recreation each year. They do not necessarily spend it for the same things, however. With increased income, people not only increase their participation in the same activities, but also tend to reach for more possessions and higher quality, more varied experiences. Increased per capita income may result in more frequent visits to the NRA by local residents, more visits from people living at greater distances, and a higher rate of spending by all visitors. It could also mean that more people will choose more expensive resorts, second homes, and mobile homes.

On the other hand, recent national trends indicated a slower rate of economic growth than was anticipated. The energy situation, inflation, and environ-

mental concerns may slow the rate of increase in per capita income. Population growth expectations have been scaled back considerably in the last few years. In 1967, the NRA development plan looked toward a doubling of population by 2000. This study has taken the population replacement rate census projections of a 29-percent growth from 1970 to 2000 (17).

2. Projections are based on current patterns of visitor spending in the study area. Development of boating and water skiing will result in sales of this and similar equipment to local residents, and probable development of commercial outlets for this equipment in the study area. This potential development is not included in the spending and income effects projected here.

3. Construction and maintenance of second homes in the study area would increase trade and service employment and income indirectly attributable to the NRA.

4. Construction and maintenance of the highway and water development projects in the study area would provide employment and income.

5. Construction of trade and service facilities to provide for the spending and income levels projected would provide additional jobs and income. Investments for new commercial facilities to meet the increased visitation needs would total about $450,000, according to coefficients of capital expansion. In addition, increased spending by local people would initiate new capital needs of about $100,000. About $150,000 would be spent for out-of-State purchases, leaving about $400,000 for purchases within West Virginia. Possibly $200,000 of this would be spent locally.

6. Changing gas prices may affect the number of visitors but would not have much influence on the effective spending per visitor or the resulting personal income. An increase in gas prices of 50 percent might result in a 1-percent increase in personal income from recreation spending.

WHAT ELSE IS HAPPENING IN THE LOCAL ECONOMY?

The projected increase of half a million dollars in personal income for the study area is equivalent to about 1 percent of 1970 net personal income of $55.3 million in the three-county area. It would amount to a $21 increase in per capita income at 1970 prices. Average per capita income depends on a number of factors such as size of family, rate of employment, type of employment, and size of community. The potential increase of about 100 full-time jobs would be equivalent to reducing the 1972 unemployment rate by one percentage point. These economic impacts appear small and readily absorbable within the economy of the three-county area. The question remains, will they be compatible with the local economy?

Patterns and Trends

Population in the three-county area exhibits trends somewhat similar to national trends; it is becoming more concentrated. Shacks are being abandoned along rural roads while new houses are being built along highways. The larger towns,

Petersburg and Moorefield, each with over 1,000 population, are growing in size; the three smaller towns, with less the 1,000 population, are declining. This trend toward concentration of population brings people closer to commercial and government services and makes these services more economic to provide.

The larger the town, the more diversified is its business. For instance, a study in Oklahoma indicated that places of less than 200 population usually had no more than a service station, grocery store, church, eating place, beauty salon, and agricultural supply store (4). The study described a "threshold population" as the population level at which a new type of enterprise was likely to appear. For example, a drug store was likely if the town had more than 228 population, a laundromat at 492 people, a furniture store at 636, a physician's office at 706 people, a sporting goods store at 1,271, a dentist at 1,524, and accounting services at 2,611.

These threshold populations from Oklahoma illustrate a similar phenomenon in West Virginia. The use of town services by the rural population certainly affects the threshold level. Rural people, however, may forego many services not convenient to them. A transient or seasonal tourist population also affects the type and cost of commercial facilities available for the resident population. The per capital income level and the nature of the employment base are also important to the threshold level and vice versa. Additional services provide more job opportunities.

The more complex the economy of a town, the higher the average income is likely to be. Analysis of a five-county area (Grant, Hardy, and Pendleton plus Tucker and Randolph) indicated a relatively close correlation between size of community and average taxable income per taxpayer, and showed the average taxable income in a community of 100 taxpayers was about $4,600 and in a community of 1,000 taxpayers, about $5,000. 9/ For West Virginia, it was indicated that average income per taxpayer for a city of 10,000 taxpayers would be about $5,600, and for a city of 50,000 about $6,500 (16).

Increasing complexity and scale of business is indicated in the three-county area. Assets of the five banks in 1972 totaled $45.4 million and loans totaled $25.5 million (19). These compare with 1970 personal income of $55.3 million. Bank assets increased 237 percent in the period 1963-72, compared with a mere 102-percent increase in personal income in the same period.

The 1967 Census of Business showed 395 wholesale, retail, and service establishments with annual sales or receipts of $35.3 million (table 8). There were 347 proprietors and 907 employees (week of March 12, 1967) with a payroll of $2.8 million (11). Data from the 1972 Census of Business are not yet available. According to similar data from another source, the number of trade and service establishments in the three-county area has changed little since 1967, but trade and service employment has increased substantially (12).

9/ Correlation analysis of the computer summation of 1969 tax returns by the Internal Revenue Service, by zip code.

Table 8--Wholesale and retail sales and services in the three-county area, 1967

Type of establishment	Establishments	Sales	Percent of total retail sales
	Number	1,000 dollars	Percent
Wholesale sales:			
Total wholesales	22	$14,402	5
Retail sales:			
Building materials, hardware, and farm equipment 1/	17	975	5
General merchandise group stores	34	1,557	8
Food stores 1/	61	5,942	31
Automotive dealers	15	3,612	19
Gasoline service stations	35	1,945	10
Apparel and accessory stores 1/	3	226	1
Furniture, home furnishings, and equipment 1/	11	558	3
Eating and drinking places	42	1,051	5
Drug stores 1/	4	284	2
Miscellaneous retail stores	35	2,501	13
Nonstore retailers 1/	7	554	3
Total retail sales	264	$19,205	100
Services:			
Hotels, motels, tourist courts, camps	21	NA	
Personal services	41	NA	
Miscellaneous business services	13	NA	
Auto repair, auto services, garages	16	NA	
Miscellaneous repair services	7	NA	
Motion pictures	6	NA	
Other amusement, recreation services	5	NA	
Total services	109	$ 1,709	9
Grand total	395	$35,316	

NA = not available

1/ Detail for certain counties was not provided by the census. Total was allocated on basis of reports from other reporting counties.

Source: (11)

Sales by wholesale establishments ($14.4 million) amounted to 75 percent of retail sales ($19.2 million) in the area. (For the State, wholesale sales were 80 percent of retail sales, indicating a fairly mature wholesale distribution system in the three-county area.) Food stores accounted for the largest share of retail sales (31 percent); automotive dealers and gasoline stations accounted for an additional 29 percent. Receipts in the service sector amounted to only 9 percent of total retail sales, indicating a less well-developed service sector. At the State level, services were 13 percent of total retail sales. (Detail by service subsector was not provided by the source.)

How important is the service industry to recreation? A number of motels and restaurants encourages tourists to stop but does not guarantee that they will. A shortage of facilities may mean that existing facilities operate at a higher percent of capacity and profit rate. Or it may mean that more desirable accommodations are plentiful in other areas with longer tourist seasons or more commercial trade. A large increase in tourist numbers does not guarantee a proportionate increase in motels but it suggests this may occur.

Income

Net personal income of the three-county area was $55.3 million in 1970, about double the 1959 level. Distribution was:

Type of income	Million dollars	Percent
Labor income	36.3	63
Proprietor income	5.1	9
Total earned income	41.4	72
Property income	6.7	12
Transfer payments	9.0	16
Total personal income	57.1	100
Less social security contributions	-1.8	-3
Net personal income	55.3	97

The 1970 per capita income of the three-county area ($2,258) was nearly 10 times the 1929 level of $229 on a current dollar basis (table 9). When effects of inflation are removed, the 1970 level is only four times the 1929 level. In 1929, the per capita income in the study area was 32 percent of the national level. It gained relative to the rest of the country until 1950 when it peaked at 59 percent, then slipped to 49 percent in 1959 due to the declining farm prices and high unemployment, and recovered to 56 percent by 1970.

Table 9--Per capita income, three-county area and United States, 1929-70

Year	Population	Total personal income	Per capita income: Current dollars	Per capita income: Constant 1967 dollars	Index 1950=100	Percent of U.S. per capita income	U.S. per capita income, 1967 dollars
	Number	1,000 dollars	----Dollars-----			Percent	Dollars
1929	27,659	6,332	229	474	39	32	1,458
1940	30,502	6,789	223	560	46	38	1,489
1950	28,101	24,698	878	1,211	100	59	2,064
1959	25,945	27,418	1,057	1,194	99	49	2,441
1970	24,493	55,305	2,258	1,962	162	56	3,476

Source: Bur. Econ. Anal., Dept. Commerce, and derived data.

Gains in per capita real income in 1959-70 were the result of a number of factors including higher employment and generally smaller families. Growth in per capita real income of $768 (in constant 1967 dollars) for the three-county area 1959-70 appears to be due to these factors:

	Percent	Dollars
Property income	19	144
Social security and other transfer payments	21	158
Wage increase (less social security contribution)	30	232
Change in employment	20	153
Change in population	10	81
Total change in income	100	768

The effect of smaller families has been offset to some extent by a larger number of retired people. Although retired people usually have smaller earnings than working people, they frequently have property income. Property income has increased more rapidly than other sectors and in 1970 accounted for a reported 12 percent of total personal income, compared to only 6 percent in 1959. The general wage level increased about 50 percent (1959-70), while the cost of living went up by 33 percent, leaving a net gain of about 17 percent. If wage levels had remained unchanged, per capita income would still have increased by 45 percent or $536 in constant 1967 dollars.

Income data in table 9 from Department of Commerce estimates of economic activity by economic area include income earned within the study area by outside residents and exclude income of area residents earned in other counties. The 1969 data from the 1970 Census based on county of residence indicate a per

capita income of $1,818 for the study area. Grant County ($1,863) was about 5 percent higher than Pendleton County ($1,777), and Hardy County ($1,808) was about average (13).

Looking ahead to future gains in per capita income, the major shift from low-paying agriculture to higher paying jobs has largely been accomplished. Further gains in per capita income compared to the rest of the country may be somewhat harder to come by. Future income gains for the area may include: (1) an expanding retirement community, with property and retirement incomes, 10/ (2) an increasing number of part-time jobs for students, housewives, and retired workers, (3) an increasing number of better paying jobs for more highly trained people, and (4) more sophisticated manufacturing plants with generally higher wage levels.

Employment

The number of persons employed in the three-county area in 1970 was down 11 percent from 1950 due entirely to the decline of the small farm. Nonfarm employment has increased every decade since 1940, and, in 1970, was 80 percent above the 1940 level. Nonfarm employment increased from 12 to 28 percent of the population (table 10).

The two series of employment data available for area analysis define the population by residence (labor force) and work location (work force) (13, 20). They are not strictly comparable, since a number of workers commute to jobs in surrounding counties and some workers maintain a home at considerable distance from their place of employment and do not return to their permanent residence every night.

Table 10--Size of households and farm and nonfarm employment, three-county area, 1940-70

Year	Per household			Employment as percentage of population	Nonfarm employment as percentage of population
	Persons	Persons employed	Nonfarm employment		
	-----Persons-----			-------Percent-------	
1940	4.7	1.25	.58	27	12
1950	4.1	1.29	.64	31	15
1960	3.7	1.08	.74	29	20
1970	3.2	1.03	.89	32	28

Source: Derived from table 14.

10/ The number of people 45 years and older actually increased during 1950-60. Those 55 and older increased in 1960-70.

Labor Force Participation

More than the unemployment rate is needed to measure the economic health of the employable population. A study by the U.S. Department of Agriculture of the 1960 Population Census indicated that 39 percent of the available labor in Grant and Hardy Counties and 47 percent in Pendleton County was not utilized (6). 11/ Only three other counties in West Virginia had rates as high as these--Gilmer, Hampshire, and Monroe. The study classed severe underemployment as 20 percent and over. For the United States, 15.5 percent of male workers lived in counties with severe underemployment.

Similar data have not been calculated for 1970. Considerable improvement is evident in unemployment levels, while job participation rates compare favorably with the rest of the State. However, further improvement would be desirable.

The West Virginia Employment Security Division reports a significant decline in unemployment levels in the three-county area--from 1,500 (16 percent) in 1958 to 520 (5.8 percent) in 1972 (20, 21). Unemployment averages were:

Period	Percent
1958-62	13.4
1963-67	10.0
1968-72	6.3

Unemployment rates for males in the three counties were similar and somewhat higher than the average for the State; for females the rates were lower (table 11).

Table 11--Unemployment as a percentage of labor force, 1970 1/

County/State	Male	Female
	Percent	
Grant	6.2	4.5
Hardy	6.9	4.8
Pendleton	6.7	1.8
West Virginia	5.5	4.9

1/ 16 years old and over.

Source: (13).

11/ The index represents the man-years of unutilized labor in proportion to the civilian labor force based on employment, education, and per capita income factors.

The three-county area had a job participation rate of 48 percent of the population over 16 years of age, which was slightly above the State rate of 47 percent. The participation rate of females at 28 percent was a little below the State rate of 29 percent (table 12). The rate for males (69 percent) was well above the State rate (67 percent). On a county basis, Grant and Hardy were above or at the State rate and Pendleton was well below for both males and females.

Pendleton County exceeded the State rate for labor force participation in the younger age groups, particularly those 20-24 years old, and in the older group, 65 and over, among both men and women.

Table 12--Labor force as a percentage of population, 1970 1/

County/State	Male	Female
	Percent	
Grant	71	29
Hardy	71	30
Pendleton	62	25
Three-county area	69	28
West Virginia	67	29

1/ 16 years old and over.

Source: (13).

Until fairly recently, agriculture and forestry were the major sources of employment for residents of the three-county area. Agricultural employment dropped from more than half of the total prior to 1950 to less than one-third by 1960 and to about one eighth by 1970 (table 13). It decreased from more than 4,000 persons in 1940 and 1950 to less than 1,000 in 1970, according to the U.S. census.

Total employment declined about 1,000 during 1950-70. Manufacturing jobs increased about 1,200 while another 1,000 jobs developed in other sectors, mainly trades and services. Mining has never been a significant source of employment for area residents. Fewer than 200 of the 660 mining jobs were held by residents. Grant County accounted for most of these resident job holders--many of them employed in the petroleum and gas industry. Contract construction has provided relatively well-paying employment. In 1970, 955 residents reported construction employment, although only 430 construction jobs were reported in the three-county area. Since major construction activities are relatively short-lived, better paid workers tend to remain with a construction company and move about.

Table 13--Employment by sectors as percentage of total employment, three-county area, 1940-70

Sector	1940	1950	1960	1970
		Percent		
Agriculture	55	52	32	13
Mining	2	2	1	3
Construction	5	6	9	12
Manufacturing	12	12	18	29
Transportation, communications, and utilities	2	3	5	6
Trade	7	10	15	15
Finance, insurance, and real estate	-	1	1	1
Service	14	12	15	17
Public administration	3	2	4	4
Total	100	100	100	100

- = less than 0.5 percent.

Source: (13) and (1).

Place of Work

In April 1970, about 1,800 residents of the three-county area held jobs outside their home county, while about 1,400 commuted from other counties to work in the three-county area. 12/ About 600 of the 1,800 commuting residents worked in one of the other three study counties. Approximately 200 worked in other parts of West Virginia, about 550 in Virginia, 60 in Maryland, and about 400 in other counties outside the daily commuting area. The three-county area provided jobs for about 600 workers living in one of the other study counties, nearly 600 West Virginians from nonstudy counties, about 140 Marylanders, and 70 Virginians. The general employment movement was west to east. From other parts of West Virginia, the study area had a net inmovement of nearly 400 workers, and to Virginia a net outmovement of nearly 500.

12/ The 1970 census reported the county of work of persons employed during April 1, 1970, based on a sample of 15 percent of the population. In appendix tables 7 and 8, these figures were adjusted to account for (1) a difference of 254 persons between total employed 14 years and over reported in the completed census and in the expanded sample, and (2) 664 persons not reporting their place of work. The total of 1,188 persons not accounted for represent 18 percent of total persons employed during the report week. They were assumed to have the same location distribution as those reporting place of employment.

Nearly 400 residents of the area held jobs outside the contiguous commuting area; actual locations of these jobs were not reported by the census. There was no record of the number or residence of those workers from noncontiguous counties who held jobs in the study area.

The three counties had a net outmovement of about 400 workers. Grant County had a net inflow of workers while the other two counties had net outflows. Twenty-three percent of the Grant County labor force was employed outside the county while 25 percent of the county work force came from outside--a net inflow of 57 workers. In Hardy County, 28 percent of the labor force worked outside the county and 19 percent of the work force came from outside--a net outflow of 307 workers. Because of its relative inaccessibility, Pendleton County experienced much less commuting. In 1970, 15 percent of the labor force left the county to work and only 8 percent of the work force came from outside the county--a net outflow of 145 workers.

Data suggest that 1970 employment levels in Grant County were fairly satisfactory compared to Hardy and Pendleton Counties. For women, the low unemployment rate in Pendleton County is accompanied by a labor force participation rate well below the average for the State and the other two counties, probably due to a lack of jobs. Thus, Pendleton County appears to have sufficient labor to provide for new motels and restaurants. However, because these jobs pay low wages and labor needs fluctuate, they are generally filled by nearby labor. It appears that Pendleton County would stand to gain less from NRA development than the more accessible Grant County, where facilities are more convenient to the population center.

Population

The NRA is being developed in one of the more sparsely settled areas of the Eastern United States. The 1970 population of 24,493 (table 14) gave a density of only 14 persons per square mile in the three-county area.

While the U.S. population increased 54 percent in 1940-70, the three-county study area population declined 20 percent from its 1940 peak of 30,502. Rate of decline varied by counties--Grant lost 2 percent, Hardy lost 19 percent, and Pendleton lost 36 percent of the 1940 population level.

The drop in population has been largely due to smaller families and a decline in the rate of family formations during the late fifties. However, the number of households has increased every decade since 1940, and in 1970 was 16 percent higher than in 1940 (see table 14). Outmigration was particularly heavy during the 1940's and 1950's, primarily because natural population increase was greater than local job opportunities could absorb.

More than half the population under 20 years of age in 1950 had left the area by 1970. After their 20th birthday, fewer residents leave. Only 16 percent of the population age 20-49 left the area in 1950-60. New job opportunities in the late sixties and early seventies encouraged more young people to stay in the area and in 1960-70, the loss was only 5 percent for this age group.

Table 14--Population and employment, three-county area, 1940-70

Year	Total population	Total population in households	Households	Persons employed	Nonfarm employment
		Number			
1940	30,502	30,502	6,493	8,113	3,740
1950	28,101	27,990	6,767	8,724	4,345
1960	25,705	25,634	6,848	7,419	5,088
1970	24,493	24,357	7,559	7,749	6,762

Source: (13).

The size of the 20-29 age group, which generally provides for new family formation, was larger in 1970 than in 1960. This, combined with generally smaller families, has led to a more stable population. Population has already turned upward in Grant County. In Hardy County, the 15-34 year-old group has already turned upward, and the next census will probably show a net increase in county population. In Pendleton County, the 20-24 year-old group has increased but not enough to indicate an end to further population decline.

Outlook

It appears that the NRA and subsidiary developments will not dominate the area's economy. On the contrary, they may provide seasonal and supplementary employment for students, married women, and retired persons. The NRA area appears to have an adequate supply of such labor, although it is not necessarily convenient to potential demand locations. This situation may tend to raise wage rates.

To some extent, at least, higher incomes may be offset by higher costs of living. Perhaps most significant will be the availability of higher level services for visitors and a wider selection of job opportunities for local people.

The foregoing suggests that many of the primary and perhaps most of the local secondary economic impacts from visitation to the NRA will accrue to Petersburg and Moorefield, which are gateway communities to traffic from the Washington-Baltimore area. Depending on completion and final routing of Appalachian Corridor H and the Highland Scenic Highway, other gateway communities could develop for traffic coming from the west and north.

An increasing labor base and the availability of a wider variety of skills should draw new enterprises to the area. The availability of part-time or seasonal employment in the recreation sector may contribute to family income and encourage some families to remain in the area rather than seek better financial opportunities elsewhere. Evidence shows a continued strengthening of the area economy, especially in larger communities. Improvements in community facilities and consumer services can be expected to continue. These will provide additional opportunities for investment in small business.

ARE LAND USE CONCERNS VALID?

At least as important as economic considerations are the implications of the NRA on the use of land. Increasing concern is expressed that public and private lands are being irreversibly committed without adequate regard for the future. For example, a natural gas pumping station is located within the scenic environment of the Seneca Rocks. Questions also arise regarding the use of undeveloped areas for highways, commercial establishments, camping sites, and so forth. Land use implications in the NRA generally fall into five categories: (1) loss of production in agriculture and forestry, (2) uncertainty of inholders regarding NRA land acquisition, (3) environmental concern for maintaining or enhancing quality of land use, (4) sites of commercial and recreational development adjacent to NRA, and (5) community concerns. Acquisition or development decisions regarding any one site or any management area may have implications in all five categories.

Loss of Production in Agriculture and Forestry

Land in the three counties is used mainly for agriculture, forestry, and recreation. According to the management plan, there would be some reduction of grazing and timber harvest in the NRA. but, reduction in harvestable timber acreage is expected to be balanced over the longer run by increased yields due to better management on better lands. Reduction in grazing is a tradeoff for environmental values, and may have longrun financial benefits, as well as continued scenic benefits.

Agriculture

Only 55 percent of the land in the three counties is farmland (table 15). Less than 5 percent of the land area and only 8 percent of the farmland is harvested cropland, mostly hay and silage. Of the 57,000 acres of private land within the NRA boundaries in 1967, about 17,000 acres were cleared for pasture or farming (9). Another 2,600 acres of National Forest land were grazing allotments rented to local livestock men. Only 670 acres of the allotments were actually suited for grazing, and they provided 553 animal unit months (AUM) of grazing per month.

The cleared farmland was estimated to carry 1.65 AUM per acre, giving a total grazing capacity of 30,000 AUM. In 1967, 143 farms in the NRA produced 36,845 AUM of grazing, about 23 percent more than the estimated carrying capacity. Part of the excess was due to overstocking on good range and also to grazing unsuitable lands that should have been in forest. Either use contributes to erosion and is not compatible with the environmental goals of the NRA. To correct the problem, the NRA plan proposes either acquisition of problem areas or scenic easements to limit grazing to safe carrying capacity.

Table 15--Land area and percentage of land area in specified uses, Grant, Hardy, Pendleton Counties, West Va., 1969

Item	Grant	Hardy	Pendleton	Total
		1,000 acres		
Land area	304	374	441	1,119
		Percent		
Federal ownership	5	13	25	15
Farmland	52	47	63	55
Forest land	72	75	67	71
Farm forest	26	23	31	27
Private non-farm forest	41	39	11	29

Source: (14), (23)

Agriculture within the NRA is similar to that on adjacent lands. The agricultural census gives some indication of the status of agriculture in 1969. Livestock production accounted for 94 percent of 1969 farm sales, down from 96 percent in the three previous censuses. Poultry accounted for 57 percent of livestock and products sales, cattle and dairy products for 29 percent, and other livestock--mainly sheep--for 13 percent (table 16). 13/

Table 16--Sales of livestock and livestock products, three-county area, 1969 1/

County	Poultry and products	Cattle and products	Other livestock	Total
		Million dollars		
Grant	1.0	1.0	.3	2.3
Hardy	4.7	1.8	1.0	7.5
Pendleton	3.2	1.7	.7	5.6
Total	8.9	4.5	2.0	15.4

1/ Farms with sales of $2,500 and over.

Source: (14).

13/ Farms with sales of $2,500 and over.

Between 300 and 400 farms contributed most of the agricultural output in the area. Table 17 shows the relative importance of a few farms. In 1969, considerably more farms reported farm expenses of $5,000 and over (514) than reported sales of $5,000 and over (321). 14/ Fifteen percent of the farms made 88 percent of farm sales while 25 percent of the farms had 90 percent of the farm expenses.

Average farm size reported in the area for 1969 was 295 acres. Full owners, accounting for 71 percent of farmland, had somewhat smaller farms (252 acres) than did straight renters (345 acres) or owner-renters (580 acres). Apparently, 80 percent or more of the farmland was owned by operators. The number of farms dropped 24 percent in 1959-69, and land in farms dropped 14 percent. The 1974 census is expected to show further declines in the area's agriculture.

Farm earnings dropped drastically from $14.0 million in 1950 to $3.1 million in 1969. In 1950 farm earnings were 62 percent of total earned income for the three-county area. Although farm sales had increased to $18.2 million by 1959, farm earnings were $9.3 million, or 41 percent of total earnings. By 1969, farm sales had dropped to $17.4 million but earnings were only a third of their 1959 level due to greatly increased farm costs and to higher capital investment.

Competition between speculators and developers looking for desirable mountain land for retirement and second homes has priced lands too high for commercial farm purposes in many instances. Between 1964 and 1969, reported average value per acre of farmland went up 70 percent in the three-county area--from $62 to $106 per acre. Value of land and buildings per farm averaged about $31,600 in the three-county area in 1969. Farms with $2,500 or more in sales averaged $49,300 in value or 2.8 times the $17,500 value of farms with sales below $2,500.

Many of the holdings classed as farms, as well as a number of rural holdings that no longer fit the census definition of a farm, are probably held primarily for residential or speculative purposes. Unfortunately, these holdings put additional pressures on commercial farm operators. They increase the cost of farming by making it difficult for farmers to increase their acreage, and they offer a high-priced market if operators find farming unprofitable.

The rapid rise in land prices may have increased the speculative interest in land, with owners becoming more interested in the speculative value than the use value of their holdings.

14/ Data are not available on the contribution of the larger farms in all statistical sectors. Some farms may be large in area but relatively insignificant in total output; others, such as broiler operations, may be small in area but large in output. Some small farms may report large investments and high costs relative to net income.

Table 17--Selected agricultural data: Total and selected groups as percentage of total, three-county area 1969

Item	All farms	Selected farms		Percent of all farms	
	Total	Farms with--	Number of farms	Farm numbers 1/	Item 2/
	(1)	(2)	(3)	(4)	(5)
			Number	Percent	
Acreage:					
Land in farms	611,000 acres	500 total acres and over	336	16	53
Total cropland	150,000 acres	Cropland	1,630	78	100
Cropland harvested	50,000 acres	500 total acres and over	316	15	34
Livestock inventory and sales:					
Pigs--inventory	15,300 pigs	100 and over on hand	37	2	46
Pigs--sales	29,000 pigs	100 and over sold	91	4	68
Cattle--inventory	43,500 cattle	100 and over on hand	119	6	50
Cattle--sales	24,500 cattle	100 and over sold	10	1	25
Sheep and lambs--inventory	40,300 sheep	All sheep and lambs	570	27	100
Sheep and lambs--sales	34,700 sheep	All sheep and lamb sales	575	28	100
Broilers--inventory	2.4 million broilers	All broilers	164	8	100
Broilers--sales	12.0 million broilers	All broiler sales	259	12	100
Value of sales and investment:					
Farm sales	$17.4 million	Sales $5,000 and over	321	15	3/ 88
Value of land and buildings	$64.9 million	Farm sales of $2,500 and over	902	43	69
Value of machinery and equipment	$ 6.8 million	Value $10,000 and over	217	10	62
Farm expense	$13.9 million	Expenses $5,000 and over	514	25	3/ 90

1/ Column (3) as percent of 2,039 total farms.
2/ Item for selected farms as percent of column 1.
3/ Author's estimate.

Forestry

About 71 percent of the land in the three-county area is classified as forest land (table 15). In 1967, about 71,000 acres of commercial forest lay within the NRA boundary--37,000 acres in private ownership and 34,000 acres in National Forest. The management proposals for the NRA would reduce commercial forest to about 35,000 acres. Cutting would be restricted to protect critical watershed on about 5,000 acres. On an additional 18,000 acres, harvest would be reduced by about half to protect recreation value. No cutting at all will be permitted in the 21,300-acre pioneer zone. Some 25,000 acres would be available for commercial harvest, subject to normal timber management considerations.

Based on growth and volume, forest cut has been below its potential in recent years. Large areas of second growth are now reaching maturity, and total timber growth exceeds market requirements. The cut of some species exceeds growth while others are largely unused. Because of their topography, prime recreation areas do not generally overlap prime commercial forest areas. Thus, rates of cut within the NRA could be maintained fairly well in the immediate future without interfering with recreation management. Forest funds could be applied to more intensive management of commercial forest so that improved stocking and rates of growth would increase output. Although some increase in timber harvest will be foregone, the financial loss will be offset by growth in the recreation industry and enhanced environmental values. NRA recreation expenditures are budgeted separately so that there is no competition between recreation and forestry budgets.

Uncertainty of Inholders Regarding NRA Acquisition Plans

To round out the 100,000 acres in the NRA, the land adjustment plan provided for purchase of 18,151 acres of Priority I land in fee by 1975 and acquisition of 6,887 acres under scenic easements by 1985. Priority I land is considered necessary to carry out the management goals of the NRA. An additional 31,000 acres of low- or moderate-priority land were scheduled for acquisition on a willing seller basis (about 21,000 in fee and 10,000 in scenic easements). Present management of this land was considered compatible with the purpose of the NRA.

Although the status of each parcel of land was spelled out in the Land Adjustment Plan (9), funding was not provided for orderly acquisition. Because of local concern, the acquisition plan was revised to restrict use of eminent domain proceedings to tracts considered essential to the project development. Other tracts that might be available were to be bought on a willing seller basis. Because of delays resulting from procedures involved in Federal land purchases, some designated lands have been sold privately and subdivided. These tracts are now available only at increased costs to the government, and escalation of area land prices in the last 5 years has further increased acquisition costs of project lands.

These events have lessened the pressure on inholders--owners of land within specified boundaries of the NRA--but have not removed the uncertainty. Inholders' concern may take either of two sides: (1) desire to continue present operations without interference and (2) desire to profit from the new situation

by changing activities or selling the land. The pressure on inholders varies according to the location of their land in relation to the management zones of the NRA. Plans for the pioneer zones would gradually phase out all evidence of human occupation, although grazing would be permitted. Present owners of farmland in the planned pioneer zone would be permitted occupancy up to 1995, and grazing or pasture rights could be retained, provided no improvements other than fences were needed to exercise these rights.

In the water related and scenic travel zones, the NRA expects to acquire about 8,000 acres in fee, together with scenic easements on 6,000 acres of other rural land. Scenic easements would permit existing farm structures and rural residences to remain but would limit new construction to conforming uses specified in the easement. Scenic easements would be required for commercial property. However, local zoning ordinances limiting nonresidential uses would be encouraged as an alternative to acquisition in designated residential areas.

Plans for the forest management zone permit owners to retain their land as long as use and development are compatible with NRA purposes. Properties are to be acquired on a willing seller basis. No action to acquire lands or interests in land under eminent domain authority is planned for this zone unless land abuse is destroying water quality or overdevelopment is taking place.

The NRA 10-year development plan spelled out fairly clearly the land area in demand by the Federal Government, but events have not closely followed the plan. Because some landowners desire to sell while others are reluctant, the government has bought some parcels earlier than planned, while other desirable parcels have not yet been acquired.

By June 30, 1974, the NRA had acquired about 9,000 acres, most of it in fee and 80 percent of it on a willing seller basis. About half of it, however, was not Priority I land. The NRA had acquired only 4,500 of the 18,151 acres of Priority I land, and was at least 4 years behind schedule. The outside competition for land was not detailed in the plan and has had some effect on acquisition plans. Some designated land was sold privately and subdivided, while some was acquired by the NRA because of the threat of development. In addition, some undesignated land has changed hands, with a strong likelihood that the NRA has increased the land's desirability and therefore its price.

Designation of the NRA has undoubtedly increased land values. This is to be expected regardless of court decisions or outside demand, because normal values established by willing buyers and sellers are affected by just one more buyer or one less seller. Large demand by the Federal Government reduced the supply of land available at previously prevailing prices to other buyers.

Environmental Concerns

A primary reason for establishing the NRA was to provide a place where people could have personal contact with a protected and unique natural environment. This requires management, a continuing process that varies according to the demands made upon it and the personal, fiscal, and natural resources available.

Flexibility in such a process can benefit the NRA and the local community and economy if good working relationships, confidence, and competence can be maintained.

The Forest Service wants to keep farmland in the NRA productive and in private ownership, and at the same time have the farms provide an attractive view. This dual purpose can be accomplished through use of scenic easements and land use regulations. If the government and the local people can reach an agreement on land use goals, there will be less need for Federal regulations and land acquisition.

Easements continue the owner's right to farm, harvest, and graze the land in accordance with good management practices and within recognized soil capabilities. But they prevent changes in land use that would detract from the aesthetic value of the farmland. The owner retains the right to maintain, restore, replace, and add needed buildings. Timber can be harvested in accordance with good forest management practices.

Scenic and conservation easements in the NRA will be designed to fit the individual property. The Forest Service will work with landowners to preserve the view and, as nearly as possible, let the owner use the land as he wants. Scenic easement may also be used to maintain existing residential areas. Because stores and services are needed to serve the public, some easements will provide for commercial use. Scenic easements may not be practical in all cases--on commercial forest land, for example. Fee acquisition of watershed and forested lands is preferred, although easements might be used to provide walkways along rivers.

Another alternative to easements and fee acquisition is effective county zoning ordinances. Zoning would protect scenic values at less cost than fee purchase. Fee purchase might be necessary if conservation easements proved unacceptable.

Thus, local people have a direct responsibility in determining acquisition policy in this area, and an opportunity to help the NRA meet its goal. On the other hand, some people question whether the NRA management goals are too development-oriented. They recommend even greater protection for the natural environment.

Sites for Commercial and Recreation Development

Development indicated in the foregoing analysis will not require an excessive amount of land. If land is allocated to the most desirable uses, development will probably cause little disruption. Landholding practices by government and private owners, however, mean that commercial uses of land may, in many cases, be limited by whatever land happens to be on the market at the moment.

As is typical of Appalachia, there is little land suitable for large urban developments. There appears to be adequate land for recreation development--land that is of reasonable slope and not subject to flooding--and although the acreage is quite scattered, it is reasonably accessible to the highways that generally follow river valleys.

About 15 percent of the three-county area (168,000 acres) is federally owned (table 15). Under the NRA acquisition plan, Federal ownership would increase to about 20 percent. Although land use in the three counties is quite similar, there are significant differences. Only 5 percent of Grant County is in Federal ownership, compared with 25 percent in Pendleton. This could increase to 7 percent of Grant County and over one-third of Pendleton County if NRA acquisition plans are fulfilled. Pendleton County has a larger portion in farmland than Grant County leaving only 11 percent in private nonfarm forest, compared with about 40 percent of the other two counties.

Community Concerns

Public vs. Private Rights

The focal point for community concern very often appears to be conflict between government ownership and private property rights. When the government acquires land under condemnation procedures, even a fair price can seem unjust to an unwilling seller. However, community concern should be broader than the acquisition procedures of the Federal Government. The community may be affected as much by the sale of land to outside private sector buyers as by government purchases. Property rights remain with the land. Absentee landownership by either speculator or developer may result in more difficult land management and local government problems than does Federal ownership.

Thus, the problem of the NRA is not strictly a conflict between Federal and local ownership but a three-cornered conflict between Federal and local governments and private outside interests. There are different points of view among these interests--some compatible and some incompatible.

From a community point of view, the right land is not always on the market at competitive prices. From an agricultural point of view, small properties and perhaps large properties may be overpriced for agricultural and forestry purposes. From a speculative point of view, land prices are expected to increase and therefore land is a good investment. And from a recreation point of view, distance, aesthetic values, and price may have to be compromised. Nevertheless, as highways improve, the area becomes more and more competitive for the greater Washington area and other markets.

The longrun interests of the community will be served if land is used for its best purpose. If high prices drive out agricultural uses and speculative subdivision ties up land without inducing building or other business-oriented activity, commercial activity could decline. "Quick buck" subdividers, recreation trailer parks, and other exploitive uses may preempt some of the most accessible land. These activities may lower environmental quality that otherwise might attract more substantial uses over time.

Would subdivision ordinances, health regulations, and environmental concern cause visitors to go elsewhere or would they actually increase the attractiveness of the area and draw more visitors? Would such regulations merely rearrange the beneficiaries of private ownership? Do thoughtless, exploitive developments merely skim the environmental values and deprive other owners of their rightful access to their land?

Only a certain amount of development is likely to take place in the NRA area. If environmentally unsound or displeasing developments are permitted, the whole community would lose, both economically and environmentally. Those who insist on the rights of private property may, in fact, be capitalizing on public investment in roads and services, and fostering environmental pollution. The landowner's rights may, in fact, trespass on the public's rights. In effect, public rights would prevent a private landowner from requiring the public to bear the costs of air or water pollution or danger to public health and safety brought about by private exploitation of the lands.

The past decade has seen dramatic shifts in the recognition of public rights in private land. There has also been increased response to national as well as local interest in land. A national interest in unique natural areas has been responsible for a widening acquisition of Federal land by the National Park Service. Similar concepts led to acquisition of national forests under the Weeks Law.

These two elements, public rights and national interest, come together in increasing public demands that lands be managed for the public good, with environmental concerns receiving at least as much weight as economic considerations. This has been a factor in a recent timber suit which restricts cutting in the Monongahela National Forest to "dead, mature and large trees only." Here, more emphasis has been placed on the recreational value of the area than economic considerations. Such elements make it difficult to evaluate the economic effects of Federal acquisition of forest lands in the area.

Local Taxes

Taxpayers tend to question the tax loss that results from Federal ownership of tax-exempt land. In the case of National Forest lands, such losses are offset at least to some extent by (1) Federal payment from timber sales; (2) reduction in land service costs because of forest road maintenance, and lack of demand from forest lands for other county services such as schools, police, and sewage systems; and (3) relocation of former residents to tax-paying properties within the county.

In 1973, distribution of the 25-percent timber sales fund to the State for payments to counties in the Monongahela National Forest averaged about 18 cents per acre. 15/ From 1955 to 1973, Forest Service payments to Pendleton County averaged 21 cents per acre. This compares favorably with tax rates paid by the private sector.

A research study of land transfers, values, and assessments in West Virginia University's Resource Management Series is helpful in identifying the potential tax loss (3). This study analyzes land transfers during the 1968-69 fiscal year by size of holdings, market value, and assessment per acre. 16/ Taxes

15/ A proportion of proceeds from National Forest timber sales are paid to the State for payments to counties.

16/ Based on 1968 assessments and transfer values as reported in the 1968/69 fiscal year, assessments averaged about 25 percent of market value. Tax rates per $100 of valuation averaged $1.84 in Grant County and $0.94 in Pendleton County.

for land without buildings were about 32 cents per acre in Grant County and 13 cents in Pendleton County in 1968-69. Based on planned acquisitions and offsetting tax losses with timber sales payments, this would be an annual average net tax loss on land in Grant County of $1,942 (17,642 acres x 11 cents) and for Pendleton County a net gain of $3,145 (39,313 x 8 cents). Timber sales payments to counties are based on income of the entire National Forest area divided by each county's National Forest acreage. Because Forest Service acreage is increasing in Pendleton County, payments would continue to increase even though forest cut in the county may be decreased by reserving forest for recreation use.

Relocation of residents displaced by Federal purchase of land will occur gradually over the years. Although some residents will be allowed to remain in their homes the rest of their lives, younger residents may be required to move after a period of years. Those required to move may relocate within the area in new or existing housing. Because the Federal Uniform Relocation Act sometimes requires additional payments to permit displaced residents to bring housing up to a reasonable standard, levels of taxes from existing buildings are not likely to diminish and may increase when relocation is complete.

New investment in commercial facilities was estimated at $450,000 by the year 2000, and an additional $100,000 investment is expected to result from increased local income. A 25-percent assessment ratio and a tax rate of $1.40 per $100 of assessment would give the three counties an annual tax payment on new investment of $1,925 per year, based on 1971 tax rates.

These taxes on new NRA-related construction plus revenues from Forest Service timber sales appear to more than offset the tax loss from land acquisition. Compared with total real estate taxes of about $1 million paid in the three-county area in 1968-69, the amount of tax gains and losses attributed to NRA development are relatively small. Continued county revenues from National Forest timber sales, however, will depend on a resolution of the controversy on timber cutting. In addition, if recreation use replaces commercial timber sales on additional forest lands, the counties may need to seek alternate sources of compensatory revenue.

CONCLUSIONS

The visitor level in 1972 and projection to the year 2000 indicated that visitation probably would not approach the optimistic levels forecast in the original NRA plan published in 1969. The levels projected here were based on detailed analysis and subjective evaluation of several informed people. They are not, however, conclusive. Their value, then, is in forecasting alternatives and determining impacts of various types of visitors and construction.

The two most important factors in the original plan affecting visitor levels are:

1. Proposed construction of the Royal Glen Reservoir would account for about one-third of total anticipated visitation by 2000. However, this proposal is not under active consideration, nor

has it been for several years. Its activation depends on environmental and budgetary concerns outside the scope of this study and outside the range of the NRA.

2. The final routing and construction of Corridor H will have considerable influence over the NRA's accessibility. Because of undesirable environmental effects, a routing through the NRA has been opposed by the Forest Service and others. This issue is currently under active study. The economic and environmental tradeoffs will have considerable impact on the NRA and development of Petersburg.

Apart from these two concerns, the NRA's future is clouded by lack of a clear-cut funding plan. A piecemeal approach, along with competition from the private sector and lack of eminent domain proceedings, could result in gradual erosion of the original management plan's environmental goals. The original plan is not being implemented and a substitute has not been developed. Political consideration undoubtedly were involved in the original NRA proposal and political considerations also led to limitations on land acquisition and funding.

This study has indicated that:

1. Local people will probably benefit from increased recreation facilities in the NRA.

2. Net tax losses from land acquisition will be negligible, if any.

3. Income and employment benefits will not be great but will be significant, amounting to 1 or 2 percent of current personal income in the area.

4. Undisciplined development could mar the present attractive environment and preempt future development possibilities.

5. Income gains from land subdivision and development frequently go to nonresident elements.

6. Decisions on the Corridor H and the Royal Glen Reservoir may have greater impacts on the environment and the local economy than will the Forest Service NRA development.

The Potomac Headwaters Resource Conservation and Development (RC&D) Council--which initiated this study--needs to continue its responsibilities in the NRA by helping guide local concerns and land use decisionmaking. The Council should:

1. Continue working with local and State agencies in obtaining good land use laws for private lands.

2. Encourage industry and business compatible with the NRA.

3. Work with local and State agencies to obtain approved facilities for waste disposal and garbage removal.

4. Encourage other projects which will enhance environmental values.

5. Serve as an advisory committee to local governing bodies on NRA-related matters.

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APPENDIX

METHODOLOGY

The methodology of this study amounts to reducing a large number of objective and subjective estimates through computer calculation to a reasonable number of projections that can be grasped more readily. Use of computer permits drawing several cross sections of data to show effects by visitor type and by facility type.

The appendix tables present much of the basic data used to prepare the text tables. A description of the data and the calculations follows.

Appendix Table 1

Column 1. NRA visitors--derived from NRA visitor-day estimates of Forest Service by referring to capacity of motels and private campgrounds (subjective estimates).

Column 2. Days per visit--number of calendar days spent in the area (estimated from partial data).

Column 3. Persons per party--number of people arriving per auto (estimated from partial data). There is no public transportation to the area.

Column 4. Visitor days per day--number of hours spent in the NRA per day divided by 12. (The Forest Service uses the measure visitor days, which is a cumulative total of 12 hours of actual visitor presence in the NRA. It may combine several short visits, or a full time camper may be credited with 2 visitor days for every 24 hours in the NRA.) To project visitation and visitor spending by type of visitor, it is more convenient to use the concept of visits rather than visitor days. To convert from one to the other, use the formula: visitor days = number of visitors x days per visit x visitor days per day [column (1) x column (2) x column (4)].

Column 5. Spending per person per day--from appendix table 4.

Column 6. Spending per person per visit--column (5) times column (2).

Appendix table 1--Basic data for calculating visitor spending by visitor type, 1972

Type of visitor	NRA visitors	Days per visit	Persons per party	Visitor days per day 1/	Spending per person: Per day 2/	Spending per person: Per visit 3/
	(1)	(2)	(3)	(4)	(5)	(6)
	Number				Dollars	
Day visitors:						
Local	20,000	1.00	3.65	0.55	0.98	0.98
Second home	20,000	1.00	3.15	.40	3.08	3.08
Transient	48,000	1.00	3.40	.30	2.77	2.77
Lodgers:						
Motel	8,500	2.20	2.60	.50	18.43	40.55
Resort	700	3.25	2.50	.25	21.86	71.05
Campers:						
Public facilities	8,500	2.75	3.95	1.80	2.12	5.83
Private facilities	5,000	2.25	3.95	.70	3.02	6.80
Cabins	5,000	2.50	2.75	.50	4.89	12.23

1/ Number of hours of visit ÷ 12 hours per visitor day.
2/ App. table 4.
3/ Column 2 x column 5.

Source: NRA study projections.

Appendix Table 2

This is a tabulation of subjective probability estimates of the occurrence of the event listed in the stub by the date indicated in column head. One hundred percent indicates certainty that the Canaan Valley State Park ski resort will be completed by the year 2000. Zero percent indicates certainty that project Allegheny Parkway will not be operational by 1980. All estimates are a consensus of subjective expectations that the indicated projects will be operational by the data indicated. For most projects the subjective evaluation is a combination of probability and extent of completion. For example, the Highland Scenic Highway is already under construction and one section is complete. The estimate indicates that 20 percent of its probable impact at 1970 levels will be felt by 1980 and that 60 percent of its effect will be evident by 2000. This means that, although the highway may be nearly complete at that time, its unfinished state would reduce its effectiveness by 40 percent.

Appendix table 2--Estimated probability of construction of facilities influencing NRA visitor number

Type of Project	Probability of event by--		
	1980	1990	2000
	Percent		
Flat water:			
Davis Power Project	25	95	95
Royal Glen	3	45	75
Rowlesburg	10	60	70
Bloomington	50	55	95
Spruce Knob Lake	20	50	95
Arrowhead	60	80	80
Seneca Lake	2	15	40
Long Run Lake	0	30	55
Ski resorts:			
Canaan Valley	75	85	100
Job Mountain	2	20	55
Snowshoe	20	75	95
Bryce Mountain	10	30	70
Highway projects:			
Corridor H:			
Corridor H Romney	10	15	20
Corridor H Petersburg	10	40	40
Corridor H Moorefield	10	15	20
Route 66	20	70	100
Highland Scenic Highway	20	35	60
Allegheny Parkway	0	5	7
Other north-south	15	40	75
Seneca Rocks Scenic Drive	0	20	60
Spruce Knob Scenic Drive	10	50	80

Source: NRA study projections.

Most of the these projects are evaluated on an either-or basis-either they will be built or not. Corridor H, however, has three proposed alternate routings, and each is expected to have a different impact on visitation. Each of these is evaluated separately and ascribed a subjective probability of construction. As these alternatives become more certain, different probabilities can be applied. Corridor H-Romney is the proposed route through Canaan Valley to Route 50 at Romney, bypassing the NRA altogether and improving access to the NRA only from the west. Corridor H-Petersburg is the originally proposed routing through the NRA improving access from the east and west as well as

opening up the NRA to through travelers. It will be particularly important if Royal Glen Reservoir is built. Corridor H-Moorefield generally bypasses the NRA but links up with Route 66, greatly improving access to Washington, D.C.

Appendix Table 3

The panel members were interviewed individually and estimated probable effect of projects they were acquainted with, on each visitor type. These estimates were averaged and each panelist was then asked to reevaluate his estimate on the basis of the averages.

Subtotals and totals in appendix table 3 represent the percentage increase in number of visits if various ski resort, flat water, and highway projects were in operation at the present time. If completed, they would bring about five times (519 percent) as many local visitors as came in 1972. Water projects alone would bring four times as many (405 percent).

Appendix Table 4

A. Spending probability--subjective probability that the visitor type in the boxhead will spend for the item in the row stub (panel estimates). A probability of 1.00 indicates all visitors in the motel group pay for their lodgings, .00 that none of the visitors in the other categories pay for motel lodgings, and .30 that 30 percent of local visitors buy gas in the study area on each visit.

B. Spent per person per day--average amount in dollars spent by each visitor type who makes a purchase for the spending category indicated (panel estimates).

C. Average cost per person per day--calculated by multiplying the items in section A (spending probability) by the corresponding item in section B. For example, the first item in column 8, section C, is (.11 = 1.10 x .10). It is equivalent to the total spending for each category and visitor type, divided by total number of visitors of each type.

Spending Categories

Breakfast, lunch, dinner--average cost of these items in area restaurants.

Retail--average expenditures in drug stores, grocery stores, souvenir stores, etc. (researcher's estimates).

Motel--average cost per room divided by average number of persons per room.

Resort--this category embraced payments for trailer parks, cabins, private campgrounds, recreation farms, etc., In other words, payments to the private sector for recreation accommodations.

Appendix table 3--Effect of external project on NRA visitor levels: Percentage increase if complete

Type of project	Day visitors			Lodgers		Campers		
	Local	Second home	Transient	Motel	Resort	Public	Private	Cabins
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Percent				
Flat water:								
Davis Power project	0	10	2	1	0	5	10	10
Royal Glen Reservoir	300	150	15	30	1	75	100	100
Rowlesburg Reservoir	0	0	1	3	0	2	100	2
Bloomington Reservoir	0	0	1	0	0	0	0	0
Spruce Knob Lake	25	25	5	5	0	50	15	50
Arrowhead Lake	75	1	1	1	0	25	10	20
Seneca Lake	3	1	1	1	0	10	5	0
Long Run Lake	2	1	1	1	0	1	2	1
Subtotal	405	188	27	42	1	168	145	183
Ski resorts:								
Canaan Valley	10	2	1	10	0	0	0	0
Job Mountain	2	1	3	2	0	3	3	0
Snowshoe	2	3	1	5	0	3	3	0
Bryce Mountain	0	3	2	1	0	2	2	2
Subtotal	14	9	7	18	0	8	8	2
Highway projects								
Corridor H Romney	5	10	5	25	1	25	25	10
Corridor H Petersburg	50	75	50	50	10	30	50	30
Corridor H Moorefield	25	50	30	35	0	20	35	20
Route I 66	0	3	1	0	0	1	2	2
Highland Scenic Highway	3	2	5	0	0	2	3	0
Allegheny Parkway	6	4	10	0	0	4	6	2
Other north-south	3	2	3	0	0	2	3	0
Seneca Rock Scenic Drive	2	2	2	2	0	2	4	1
Spruce Knob Scenic Drive	6	2	2	5	0	10	15	2
Subtotal	100	150	108	117	11	96	143	67
Total	519	347	142	177	12	272	296	252

Source: NRA study projections.

Appendix table 4--NRA visitor spending: Probability of spending in the study area, average cost for those making purchase, and weighted average for all visitors

Type of spending	Day visitors			Lodgers		Campers		
	Local	Second home	Transient	Motel	Resort	Public facilities	Private facilities	Cabins
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Probability				
A. Spending probability:								
Breakfast	.00	.00	.00	.90	.00	.00	.00	.10
Lunch	.20	.30	.50	.90	.00	.20	.20	.20
Dinner	.00	.10	.10	.90	.00	.10	.10	.30
Retail	.10	.20	.20	.30	.00	.30	.30	.60
Motel	.00	.00	.00	1.00	.00	.00	.00	.00
Resort	.00	.10	.10	.10	1.00	.10	.90	.90
Recreation	.10	.20	.10	.20	.00	.10	.10	.20
Gas	.30	.60	.30	.70	.70	.60	.60	.60
				Dollars				
B. Spent/person/day:								
Breakfast	.00	.00	.00	1.10	.00	.00	.00	1.10
Lunch	1.80	1.80	1.80	1.80	.00	1.80	1.80	1.80
Dinner	.00	4.00	4.00	4.00	.00	4.00	4.00	4.00
Retail	.50	.80	1.20	1.00	.00	2.00	2.00	2.00
Motel	.00	.00	.00	10.00	.00	.00	.00	.00
Resort	.00	3.00	3.00	3.00	21.00	1.00	1.00	1.00
Recreation	2.00	2.00	2.00	2.00	.00	2.00	2.00	2.00
Gas	1.23	2.14	2.43	1.75	1.23	.76	.93	1.20
				Dollars				
C. Average cost per person per day, all visitors: 1/								
Breakfast	.00	.00	.00	.99	.00	.00	.00	.11
Lunch	.36	.54	.90	1.62	.00	.36	.36	.36
Dinner	.00	.40	.40	3.60	.00	.40	.40	1.20
Retail	.05	.16	.24	.30	.00	.60	.60	1.20
Motel	.00	.00	.00	10.00	.00	.00	.00	.00
Resort	.00	.30	.30	.30	21.00	.10	.90	.90
Recreation	.20	.40	.20	.40	.00	.20	.20	.40
Gas	.37	1.28	.73	1.22	.86	.46	.56	.72
Total	.98	3.08	2.77	18.43	21.86	2.12	3.02	4.89

1/ "Spending probability" x "spent/person/day."

Source: NRA study projections.

Recreation--payments to the private sector for greens fees, fishing permits, hunting permits, and other nonaccommodation recreation costs.

Gas--cost of gas per vehicle divided by number of persons per party and number of days per visit (see app. table 1).

Visitor Projections

Respective probabilities and percentage effects in appendix tables 2 and 3 were multiplied and summed to show percentage change in visitor numbers for each category of visitors. These were adjusted for population growth and multiplied by the visitor numbers indicated in appendix table 1 in order to project visitor numbers given in text tables 3, 4, and 5.

Columns 1, 2, and 3 of subjective probabilities are used to derive projections for 1980, 1990, and 2000. The procedure is the same in each case. Projection to the year 2000 is used to illustrate the calculation of projections in text table 3.

Column 3 of appendix table 2 is multiplied by columns 1 through 8 of appendix table 3 and the results are summed to indicate percentage change for each type of visitor by 2000. These figures were increased by 27 percent to account for population growth multiplied by number of visitors in each category (column 1 of app. table 1) to give visitor projections to 2000, based on the factors analyzed.

Subtotals of appendix table 3 were used in a similar manner to calculate the projections by type of development in text table 4.

Similar procedures, using population growth projections of 6.5 percent to 1980 and 18 percent to 1990, were used to calculate the projections for those periods given in text table 5.

Spending Projections

Projections of visitor spending in text tables 5, 6, and 7 were derived from this formula: projected visitor numbers x spending per person day x average number of days per visit (app. table 1).

In input-output methodology, the value of the output of retail trade is usually represented by trade margins. Margins of 50 percent for restaurant meals, 20 percent for gasoline and other retail trade, and 75 percent for motels and resorts were used. The input-output table allocates these margins among other sectors and household income, and derives direct and indirect income effects from such spending.

Margined spending is referred to here as effective spending to emphasize that certain types of spending have greater income effects than others.

Appendix table 5--Transactions table of West Va., Grant, Hardy, Pendleton Counties

Industry producing 1/	Industry purchasing								
	Manu-facturing	Agri-culture	Con-struction	Food manu-facturing	Wood manu-facturing	Trans-portation	Communication, utilities, and mining	Wholesale and retail trade	Banking and F.I.R.E. 2/
	1,000 dollars								
Manufacturing	.30	8.20	43.50	9.10	.10	1.60	0.0	73.50	5.30
Agriculture	.0	745.10	.0	945.10	80.50	1.50	.0	.0	.0
Construction	2.50	75.70	65.00	.0	.0	.0	4.00	79.50	4.80
Food manufacturing	.0	2,855.10	.0	9.80	5.00	3.90	.0	4.80	.0
Wood manufacturing	.0	95.00	45.00	.0	.0	.0	1.50	.0	.0
Transportation	3.40	43.30	10.30	.40	7.50	.0	349.00	122.00	.20
Communication, utilities, and mining	55.20	280.30	62.60	49.60	34.40	14.90	3,186.00	277.70	27.40
Wholesale and retail trade	10.90	816.40	105.40	19.40	13.90	66.70	57.90	992.20	6.60
Banking and F.I.R.E. 2/	4.70	155.10	39.80	4.50	9.50	27.60	2.60	96.30	5.10
Service	11.00	154.60	23.30	5.40	18.90	22.80	5.30	44.10	21.70
Local government	6.60	192.20	2.30	25.50	2.40	3.30	9.20	70.90	11.20
Households	759.60	3,075.70	2,413.90	721.90	1,530.90	872.90	3,988.60	3,905.10	763.80

See footnotes at end of table.

Continued

Appendix table 5--Transactions table of West Va., Grant, Hardy, Pendleton Counties--continued

Industry producing 1/	Service	Local government	Cabins	Public camps	Private camps	Motels	Resorts	Local day visitors	Second home day visitors	Transient day visitors	Households
					1,000 dollars						
Manufacturing	1.80	17.00	0.18	0.26	0.10	1.58	0.12	0.07	0.20	0.45	127.40
Agriculture	.0	.0	.02	.02	.0	.01	.0	.01	.03	.11	1,035.90
Construction	.0	8.80	.14	.10	.09	2.77	.18	.06	.23	.35	175.10
Food manufacturing	.0	6.20	.01	.02	.0	.11	.0	.01	.02	.09	160.00
Wood manufacturing	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Transportation	3.40	6.20	.03	.08	.02	.12	.01	.03	.05	.14	67.10
Communication, utilities, and mining	90.50	48.20	.68	.70	.38	9.79	.59	.31	1.00	2.07	902.70
Wholesale and retail trade	62.60	30.60	.70	.97	.32	5.92	.25	.44	1.23	3.59	3,455.80
Banking and F.I.R.E. 2/	13.80	7.20	.47	.44	.28	6.49	.47	.16	.60	1.10	759.20
Service	11.20	70.00	.30	.30	.18	5.26	.30	.15	.47	.81	2,772.50
Local government	21.60	7.40	.10	.12	.05	1.00	.06	.05	.15	.38	540.50
Households	2,133.40	1,693.90	4.37	5.58	2.29	45.37	2.70	2.11	6.21	15.75	714.20

1/ All sales are exogenous for cabins, public camps, private camps, motels, resorts, local day visitors, second home day visitors, or transient day visitors.
2/ Finance, insurance, and real estate.

Source: Adapted from (2).

Input-Output

Input-output methodology was used to develop income estimates from the spending impacts indicated in text tables 6 and 7. The 14 endogenous sectors of the transactions table in the Upper South Branch Valley Study (2), an input-output study for the three-county area for 1965, were reduced to 11 by the following combinations: apparel with other manufacturing; commercial banking with other finance, insurance and real estate; and communications and utilities with mining. Mined coal is used largely in production of electricity in the study area, so that this combination is logical and produces a more reasonable multiplier than the 5.17 resulting from a separate handling of communications and utilities.

The trade and service sectors were separated into local and tourist subsectors. The tourist subsectors were recombined into six recreation sectors based on comparisons with other small area input-output studies. Then subsectors were weighted together using average spending in appendix table 4, and reduced to trade margins as mentioned above in order to give sectors for each of the six visitor types analyzed. The transactions matrix is shown in appendix table 5. This was inverted and the multipliers in appendix table 6 were calculated. These proved to be substantially the same and, given the imprecision in the composite data, a single sector multiplier would probably have been adequate. The multipliers were then used to calculate the income effects in text tables. Using standard input-output techniques, the direct, indirect, and induced income effects of the visitor spending were calculated.

General

In addition to reducing the complexity, the method used in this study improves the accuracy of the projections. Many of the probable errors of estimate are offsetting so that mathematical multiplication of such numbers tends to reduce the overall error of estimate. If, for instance, we assume normal distributions about the estimate and standard errors equal to one-third the mean, the standard deviation of total spending amounts to about 21 percent of the estimated spending in the year 2000 vs. an estimated 31 percent in the base year. Subjective bias still exists in one direction or the other, but even much of the subjective bias may be decreased through combination.

The methodology assumes that facilities are mutually exclusive. In other words, the construction of one facility is not dependent on the prior construction of another. This may not be completely true. The likelihood of construction of one facility might increase the likelihood of construction of another facility. The current recreation complex in the Highland Appalachia area surrounding the NRA, however, is developed to the extent that no proposed facility can be described as a key facility. Continued development can be expected no matter what action occurs with regard to individual facilities. The probability of events in appendix table 2 should be regarded as though they were the average expected values of a frequency distribution of possible events. Under such circumstances any residual interdependence in the events may be considered to be included in the estimates given.

Regardless of the fact that construction of facilities may be independent, they will impact on each other to complement or modify visitor numbers. The degree

Appendix table 6--Recreation sector income multiplier

Type of visitor	Income multiplier		
	Direct effect	Direct/indirect effect	Direct/indirect induced effect
Day visitors:			
Local	.41	1.30	1.59
Second home	.42	1.31	1.60
Transient	.42	1.30	1.59
Lodgers:			
Motels	.45	1.33	1.63
Resorts	.45	1.33	1.62
Campers:			
Public facilities	.45	1.26	1.54
Private facilities	.45	1.29	1.58
Cabins	.44	1.29	1.57

Source: Calculated from app. table 5.

of interaction between facilities is assumed to be included in the impact analysis. In other words, each projected effect on the eight visitor groups by the 20 projected facilities may be regarded as the probable value of a frequency distribution of expected values. Each expected value would include the possibility of all ranges from the most favorable to the least favorable weighted by the expected frequency. To this degree the system includes all possible occurrences and interactions in the estimates given.

One might question when and whether these estimates should be revised if the probabilities in appendix table 2 are significantly changed. Since the system includes three possible outcomes of Corridor H, only one of which can occur, it would be necessary to recalculate using the data only for the pertinent option once that option is decided. At that time it might be desirable to reevaluate the corresponding impact estimates in table 3 and possibly reevaluate all elements of the system and derive new values. Similar procedure would be warranted if a decision is reached on Royal Glen. Except for Corridor H and Royal Glen Reservoir, none of these facilities is large enough to significantly affect the outcome.

Appendix table 7--Commuting patterns of jobholders and residents in three-county area, 1970 1/

Job location and worker residence	Number of workers residing in each county			Total
	Grant	Hardy	Pendleton	
	Number			
Job location:				
In county of residence	2,228	2,155	1,612	5,995
Outside county of residence:	(676)	(833)	(386)	(1,795)
In other study county	345	167	104	616
Outside study area:	(331)	(666)	(132)	(1,179)
Other West Virginia	99	77	21	197
Maryland	42	19	--	61
Virginia	21	401	123	545
Not recorded 2/	169	169	38	376
Total jobholders	2,904	2,988	1,898	7,790
	Number of jobs in each county			Total
	Grant	Hardy	Pendleton	
	Number			
Worker residence:				
In county of employment	2,228	2,155	1,612	5,995
Outside county of employment:	(733)	(526)	(141)	(1,400)
In other study county	247	296	73	616
Outside study area:	(486)	(230)	(68)	(748)
Other West Virginia	344	222	8	574
Maryland	142	--	--	142
Virginia	--	8	60	68
Not recorded 2, 3/	NA	NA	NA	NA
Total jobs	2,961	2,681	1,753	7,395
Net workers 4/	-57	307	145	395

-- = less than 0.5 percent, NA = data not available.

1/ Sample data adjusted to cover unreported place of work, and workers 14-16 years of age.
2/ Generally noncontiguous counties.
3/ Data are not available for residents of noncontiguous States who worked in West Virginia.
4/ Difference between "out of county" jobs and "out of county" workers.

Source: (13).

Appendix table 8--Commuting patterns for employment in three-county area, 1970 1/

	Percentage of total workers residing in county			Total
	Grant	Hardy	Pendleton	
	Percent			
Job location:				
In county of residence	77	72	85	77
Outside county of residence:				
In other study county	12	5	6	8
Outside study area:				
Other West Virginia	3	3	1	2
Maryland	1	1	--	1
Virginia	1	13	6	7
Not recorded 2/	6	6	2	5
Total jobholders	100	100	100	100

	Percentage of total jobs in each county			Total
	Grant	Hardy	Pendleton	
	Percent			
Worker residence:				
In county of employment	75	81	92	81
Outside county of employment:				
In other study county	8	11	4	8
Outside study area:				
Other West Virginia	12	8	1	8
Maryland	5	0	--	2
Virginia	—	0	3	1
Not recorded 2, 3/	NA	NA	NA	NA
Total jobs	100	100	100	100
Net workers 4/	-2	10	8	5

- = less than 0.5 percent, NA = data not available.

1/ Sample data adjusted to cover unreported place of work, and workers 14-16 years of age.
2/ Generally noncontiguous counties.
3/ Data are not available for residents of noncontiguous States who worked in West Virginia.
4/ Difference between "out of county" jobs and "out of county" workers.

Source: App. table 7.

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